



Pebble Project  
Department of the Army  
Application for Permit

POA-2017-271

JUNE 2020

3201 C Street, Suite 505  
Anchorage, AK 99503

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Initial Distribution  
Pebble Mine Project  
Application for Department of the Army Permit (POA-2017-271)

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U.S. Army Corps of Engineers (USACE)  
**APPLICATION FOR DEPARTMENT OF THE ARMY PERMIT**  
33 CFR 325. The proponent agency is CECW-CO-R.

**Form Approved -**  
**OMB No. 0710-0003**  
**Expires: 02-28-2022**

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PRIVACY ACT STATEMENT

Authorities: Rivers and Harbors Act, Section 10, 33 USC 403; Clean Water Act, Section 404, 33 USC 1344; Marine Protection, Research, and Sanctuaries Act, Section 103, 33 USC 1413; Regulatory Programs of the Corps of Engineers; Final Rule 33 CFR 320-332. Principal Purpose: Information provided on this form will be used in evaluating the application for a permit. Routine Uses: This information may be shared with the Department of Justice and other federal, state, and local government agencies, and the public and may be made available as part of a public notice as required by Federal law. Submission of requested information is voluntary, however, if information is not provided the permit application cannot be evaluated nor can a permit be issued. One set of original drawings or good reproducible copies which show the location and character of the proposed activity must be attached to this application (see sample drawings and/or instructions) and be submitted to the District Engineer having jurisdiction over the location of the proposed activity. An application that is not completed in full will be returned. System of Record Notice (SORN). The information received is entered into our permit tracking database and a SORN has been completed (SORN #A1145b) and may be accessed at the following website: <http://dpcl.d.defense.gov/Privacy/SORNSIndex/DOD-wide-SORN-Article-View/Article/570115/a1145b-ce.aspx>

(ITEMS 1 THRU 4 TO BE FILLED BY THE CORPS)

1. APPLICATION NO.	2. FIELD OFFICE CODE	3. DATE RECEIVED	4. DATE APPLICATION COMPLETE
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(ITEMS BELOW TO BE FILLED BY APPLICANT)

5. APPLICANT'S NAME First - <b>JAMES</b> Middle -                      Last - <b>FUEG</b> Company - <b>PEBBLE LIMITED PARTNERSHIP</b> E-mail Address - <a href="mailto:jamesfueg@pebblepartnership.com">jamesfueg@pebblepartnership.com</a>	8. AUTHORIZED AGENT'S NAME AND TITLE (agent is not required) First -                                      Middle -                                      Last - Company - E-mail Address - <b>Not Applicable</b>
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6. APPLICANT'S ADDRESS: Address- <b>3201 C STREET, SUITE 505</b> City - <b>ANCHORAGE</b> State - <b>AK</b> Zip - <b>99503</b> Country - <b>USA</b>	9. AGENT'S ADDRESS: Address- City -                                      State -                                      Zip -                                      Country -
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7. APPLICANT'S PHONE NOs. w/AREA CODE a. Residence                      b. Business                      c. Fax <b>907.339.2600</b> <b>907.339.2601</b>	10. AGENTS PHONE NOs. w/AREA CODE a. Residence                      b. Business                      c. Fax
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STATEMENT OF AUTHORIZATION

11. I hereby authorize, Not Applicable to act in my behalf as my agent in the processing of this application and to furnish, upon request, supplemental information in support of this permit application.

<u>Not Applicable</u> SIGNATURE OF APPLICANT	<u>Not Applicable</u> DATE
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NAME, LOCATION, AND DESCRIPTION OF PROJECT OR ACTIVITY

12. PROJECT NAME OR TITLE (see instructions)

**THE PEBBLE PROJECT**

13. NAME OF WATERBODY, IF KNOWN (if applicable)  
**See TAB 13 for Names of Waterbodies.**

14. PROJECT STREET ADDRESS (if applicable)

Address <b>Not Applicable</b>	Zip-
City -	State-

15. LOCATION OF PROJECT

Latitude: **°N 59°53'51"**                      Longitude: **°W 155°18'03"**

16. OTHER LOCATION DESCRIPTIONS, IF KNOWN (see instructions)

State Tax Parcel ID      **See TAB 16 for Other Location Descriptions.**      Municipality  
Section -                      Township -                      Range -

17. DIRECTIONS TO THE SITE

**See TAB 17 for Directions to the Site.**

18. Nature of Activity (Description of project, include all features)

**See TAB 18 for Nature of Activity.**

19. Project Purpose (Describe the reason or purpose of the project, see instructions)

**See TAB 19 for Project Purpose.**

**USE BLOCKS 20-23 IF DREDGED AND/OR FILL MATERIAL IS TO BE DISCHARGED**

20. Reason(s) for Discharge

**See TAB 20 for Reason(s) for Discharge.**

21. Type(s) of Material Being Discharged and the Amount of Each Type in Cubic Yards:

Type	Type	Type
Amount in Cubic Yards	Amount in Cubic Yards	Amount in Cubic Yards

**See TAB 21 for Type(s) of Material Being Discharged and Amount of Each Type.**

22. Surface Area in Acres of Wetlands or Other Waters Filled (see instructions)

Acres **See TAB 22 for Surface Area in Acres of Wetlands or Other Waters Filled.**

or

Linear Feet

23. Description of Avoidance, Minimization, and Compensation (see instructions)

**See TAB 23 for a description of avoidance, minimization, and compensation.**

24. Is Any Portion of the Work Already Complete? ☐ Yes ☒ No IF YES, DESCRIBE THE COMPLETED WORK

25. Addresses of Adjoining Property Owners, Lessees, Etc., Whose Property Adjoins the Waterbody (if more than can be entered here, please attach a supplemental list).

a. Address- **See TAB 25 for a table listing adjoining property owners and address information.**

City - State - Zip -

b. Address-

City - State - Zip -

c. Address-

City - State - Zip -

d. Address-

City - State - Zip -

e. Address-

City - State - Zip -

26. List of Other Certificates or Approvals/Denials received from other Federal, State, or Local Agencies for Work Described in This Application.

AGENCY	TYPE APPROVAL*	IDENTIFICATION NUMBER	DATE APPLIED	DATE APPROVED	DATE DENIED
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**See TAB 26 for a list of permits and approvals required.**

\* Would include but is not restricted to zoning, building, and flood plain permits

27. Application is hereby made for permit or permits to authorize the work described in this application. I certify that this information in this application is complete and accurate. I further certify that I possess the authority to undertake the work described herein or am acting as the duly authorized agent of the applicant.



June 8th, 2020

SIGNATURE OF APPLICANT

DATE

SIGNATURE OF AGENT

DATE

The Application must be signed by the person who desires to undertake the proposed activity (applicant) or it may be signed by a duly authorized agent if the statement in block 11 has been filled out and signed.

18 U.S.C. Section 1001 provides that: Whoever, in any manner within the jurisdiction of any department or agency of the United States knowingly and willfully falsifies, conceals, or covers up any trick, scheme, or disguises a material fact or makes any false, fictitious or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false, fictitious or fraudulent statements or entry, shall be fined not more than \$10,000 or imprisoned not more than five years or both.

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## ATTACHMENTS

Attachment A Figures

Attachment B Project Description

Attachment C Culvert Schedule

Attachment D ORM Spreadsheet and Wetlands GIS Data

Attachment E Project GIS Data

Attachment A includes the following figures:

No.	Figure Index Table		
	Category	Type	Number Series
1	Index Figures	Plan View	IG-001 and I-001
2	Natural Gas Pipeline and Fiber Optic Cable	Plan View	G-001 and G-002
3	Port	Plan View	P-001 to P-003
4	Transportation Corridor	Plan View	T-001 to T-053
5	Mine	Plan View	M-001 to M-025
6	Port	Cross Sections	PX-001 to PX-005
7	Transportation Corridor	Cross Sections	TX-001 to TX-021
8	Culverts	Cross Sections	CX-001 to CX-008
9	Bridges	Cross Sections	BX-001 to BX-017
10	Mine	Cross Sections	MX-001 to MX-016
11	Natural Gas Pipeline and Fiber Optic Cable	Cross Sections	GX-001 to GX-013

## ACRONYMS AND ABBREVIATIONS

ADEC	Alaska Department of Environmental Conservation
ADF&G	Alaska Department of Fish and Game
ADNR	Alaska Department of Natural Resources
ADOT&PF	Alaska Department of Transportation and Public Facilities
APDES	Alaska Pollutant Discharge Elimination System
BLM	Bureau of Land Management
CWA	Clean Water Act
CY	Cubic Yards
EPA	U.S. Environmental Protection Agency
HDPE	High-Density Polyethylene
HTL	High Tide Line
KP	Knight Piésold
MHW	Mean High Water
MS	Material Site
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
NPAG	Non-Potentially Acid Generating
OCS	Outer Continental Shelf
OHW	Ordinary High Water
PAG	Potentially Acid Generating
PLP	Pebble Limited Partnership
PRM	Permittee Responsible Mitigation
RHA	Rivers and Harbors Act
TSF	Tailings Storage Facility
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
WOUS	Waters of the U.S.
WTP	Water Treatment Plant



## Tab 13. Names of Waterbodies

The waterbodies directly impacted by the Pebble Project (Project) include the following:

- Cook Inlet
- Koktuli River
- Upper Talarik Creek
- Newhalen River
- Eagle Bay Creek
- Youngs Creek
- Chekok Creek
- Canyon Creek
- Knutson Creek
- Pile River
- Long Lake Creek
- Iliamna River
- Timberline Creek
- Chinkelyes Creek
- Williams Creek

## Tab 16. Other Location Descriptions

Note that all major facility locations are within the Seward Meridian.

**Table 16-1. Pebble Mine Project Major Facility Locations**

Township	Range	Section
3 South	32 West	31
	33 West	20, 21, 22, 26, 27, 28, 29, 30, 31, 35, 36
	34 West	29, 30, 32, 33, 34, 35, 36
	35 West	7, 8, 9, 10, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 32, 33
	36 West	11, 12, 13, 14, 15, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 33, 34
4 South	15 West	14
	26 West	31
	27 West	20, 21, 22, 23, 24, 25, 28, 29, 30, 31, 36
	28 West	19, 20, 28, 29, 33, 34, 35, 36
	29 West	17, 18, 19, 20, 21, 22, 23, 24, 27, 28
	30 West	13, 14, 15, 18, 19, 20, 21, 22, 23
	31 West	13, 19, 20, 21, 22, 23, 24, 27, 28, 29, 30
	32 West	7, 8, 9, 10, 15, 16, 22, 23, 24, 25
	33 West	1, 12
	34 West	2, 3, 4, 5
	36 West	3
5 South	26 West	29, 30, 32, 33, 34, 35
	27 West	2, 3, 10, 14, 15, 23, 24, 25
	28 West	3, 4
6 South	26 West	1, 2, 12, 13, 24, 27, 34
7 South	26 West	3, 9, 10, 16, 21

## Tab 17. Directions to the Site

The Pebble Deposit is located on State of Alaska lands leased by Pebble Limited Partnership (PLP) for mineral development. The deposit/mine site is not currently served by roads or railroads, nor is there a connection to existing utility infrastructure. The only access to the mine site is by helicopter or by snow machine during winter conditions. The Pebble Deposit is centered at latitude 59° 53' 51" N, longitude 155° 18' 03" W, approximately 200 miles southwest of Anchorage, Alaska, and 17 miles from the communities of Iliamna, Newhalen, and Nondalton (Figure I-001).

## Tab 18. Nature of Activity

*Additional information can be found in Attachment B—Project Description.*

### 18.1 Project Overview<sup>1</sup>

PLP is proposing to develop the Pebble copper-gold-molybdenum porphyry deposit as a surface mine in southwest Alaska. The Pebble Project (Project) is located in a sparsely populated region of southwest Alaska near Iliamna Lake, primarily within the Lake and Peninsula Borough with a portion of the supporting infrastructure in the Kenai Peninsula Borough (Figure I-001). The Project consists of four primary project elements: the mine site, the Diamond Point Port, the transportation corridor including concentrate and water return pipelines, and the natural gas pipeline and fiber optic cable. Additional information for each of the primary project elements is provided below. Detailed project information is provided in the attached Project Description.

### 18.2 Primary Project Elements

#### 18.2.1 Mine Site

The deposit is located under rolling, permafrost-free terrain in the Iliamna region of southwest Alaska, approximately 200 miles southwest of Anchorage and 60 miles west of Cook Inlet. The closest communities are the villages of Iliamna, Newhalen, and Nondalton (Figure I-001), each approximately 17 miles from the deposit. The mine site is not currently served by roads or railroads, nor is there a connection to existing utility infrastructure. The only access is by helicopter or by snow machine during winter conditions.

The Project is proposed to be a conventional drill, blast, truck, and shovel operation with a mining rate of up to 73 million tons per year. Approximately 1,300 million tons of mineralized rock and 150 million tons of waste rock will be mined over the life of the Project. The mineralized material will be crushed and sent to a coarse ore stockpile to feed the process plant. The process plant will include grinding and flotation steps, with a processing rate of up to 66 million tons per year, to produce 613,000 tons of copper-gold concentrate and 15,000 tons of molybdenum concentrate annually.

The mine site is shown in figures M-001 through M-025. The fully developed mine site will include an open pit, bulk tailings storage facility (TSF), pyritic TSF, power plant, water management ponds, water treatment plants, and milling/processing facilities as well as supporting infrastructure. Only non-potentially acid generating (NPAG) and non-metal leaching waste rock will be used in the construction of infrastructure needed to support the mine. In addition to waste rock, a total of three quarries (material sites) will also be needed. Figures M-001 and M-002 provide an overview of the

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<sup>1</sup> Design criteria as presented are approximate and have been averaged and rounded as appropriate for ease of reference.

mine site. Figures M-003 through M-025 show the footprint associated with each mine site component.

Bulk tailings will be placed in the bulk TSF, while pyritic tailings will be placed in the lined pyritic TSF. Potentially acid generating (PAG) and metal leaching waste rock will be stored in the lined pyritic TSF until closure, when it will be back-hauled into the open pit. Soils and other overburden will be stored in stockpile areas located at various locations throughout the site. Stockpiled soils and other overburden will be used for reclamation during mine closure. The bulk and pyritic TSFs are shown in figures M-007, M-008, M-013 through M-015, M-017 through M-020, and M-022.

### 18.2.2 Diamond Point Port and Lightering Location

The port site is on the shore of Iliamna Bay north of Diamond Point. It will support the movement of equipment and modules for project construction, as well as serve as a long-term logistics hub for the Project. The Diamond Point Port is shown in Figures P-001 through P-003.

The Diamond Point Port will include shore-based facilities to receive and store shipping containers and fuel, as well as concentrate dewatering facilities to dewater the concentrate pumped through the pipeline from the mine site, a bulk concentrate storage building, a pump station for the water return pipeline, a conveyor system for loading concentrate lightering barges, power generation equipment, maintenance facilities, employee accommodations, a wastewater treatment facility for the camp, and offices. The shore-based facilities will be connected to the marine facilities by an approximately 1.5 mile road, conveyor system and 8-inch fuel pipeline. .

The marine components include a causeway extending out to a marine jetty located in a dredged basin at the end of a dredged access channel that leads to deep water. The jetty will be constructed along the northern and western limits of the basin and consist of concrete caissons covered with a concrete deck. Fuel and freight barges will be moored to the jetty for loading and unloading. Fuel will be pumped to the storage tanks located at the shore-based facility through the 8-inch pipeline. A concentrate conveyor will be located on the causeway and jetty deck. In addition to the jetty, a series of three caissons will be placed within the dredged basin to provide mooring and loading for the concentrate lightering barges. A gantry will support an enclosed conveyor from the jetty to a barge loader mounted on the caissons. The causeway will also be constructed using concrete caissons to support a concrete deck. The dredged channel and turning basin will be dredged to 18 feet below Mean Lower Low Water (MLLW) to provide access to the jetty under all tidal conditions and allow for sedimentation between maintenance dredging intervals. The channel will be approximately 1.2 miles in length and 300 feet wide (3 times the maximum expected barge width). Based on available geophysical data bedrock in the vicinity of the dredged channel and basin occurs at depths greater than 100 feet, well below the proposed dredge depth. Sediments are expected to be composed of greater than 70% fines, with the remainder consisting of sand and gravel. Dredge slopes of 4H:1V are proposed to address sediment stability and the potential for seismic induced slumping. The total volume of dredged material for the initial dredging is estimated at 1,100,000 cubic yards.



Maintenance dredging (estimated at 20 inches every 5 years) is expected to total 700,000 cubic yards over twenty years (four times). Maintenance dredging would be completed during the early summer months. Dredging will be accomplished using a barge mounted cutterhead suction dredge. Dredged material would either be pumped directly to shore from the dredge barge, or placed into a small barge (200 ft x 40 ft) and hauled to shore. Boulders encountered during dredging would be removed using a grab bucket or cable net placed by divers and transported to shore for placement in the stockpiles or used in construction.

To prepare for caisson placement, the basin footprint under the caissons will be excavated and leveled to a depth of approximately 5 feet below the dredged basin or seabed using a barge mounted excavator. Once the footprint is prepared, caissons will be floated into place with a tugboat at high tide and then seated on the prepared seabed on the falling tide or slowly lowered by pumping water into the caisson. Cranes may be used to place caissons in shallower water. Once set in place, the caissons will be filled with coarse material from the dredging and additional quarried material of a size that would achieve proper compaction when filled to avoid settlement over time. The additional fill material will be sourced from onshore material sites. Fill will be transported from shore to the caissons using a barge. Initially, only enough fill will be placed into the caisson to achieve proper seating, avoiding displacement and overflow of any water within the caisson. Fill materials will be stored temporarily on a barge moored adjacent to the construction area. Any water accumulated within the caisson will be pumped out to avoid saturation in the top fill layers and, if necessary, run through tanks on a barge for sediment settlement before discharge into the marine environment. Construction workspace for the port facility below the HTL will be limited to no more than 30 feet beyond the dredged and permanently impacted areas.

The dredged material will be placed into two bermed stockpiles located in uplands adjacent to the port facility. Only clean dredged material would be placed into the stockpiles. Consolidation and runoff water would be channeled into a sediment pond and suspended sediments would be allowed to settle before discharge to Iliamna Bay. Boulders encountered during dredging would be removed using a grab bucket or cable net placed by divers and transported to shore for placement in the stockpiles or use in construction.

The dredged turning basin and access channel are in a previously unused location within Iliamna Bay. A review of State and Federal databases has not identified any incidents that could have resulted in contamination of the sediments proposed for dredging. In 2004 and 2008 PLP collected characterization sediment samples in Iliamna Bay and no pollutants were detected. Prior to dredging sampling of the full dredged section would be completed to confirm the absence of pollutants. If any are identified, polluted material would be managed separately and in accordance with State requirements.

The dredge channel and port facility are located approximately 1,700 feet to the west of the existing fiber optic cable and Williamsport access channel. Barges accessing Williamsport follow the naturally incised channel north towards the head of Iliamna Bay before turning west

towards the dredged Williamsport landing basin and dredging operations will not impede access to the facility. Activities will also be located north of the access corridor to the existing Cottonwood Bay gravel mining operation and would not impede access to that facility. Marine vessels not in active use for construction and dredging would be anchored in deeper water west of the main passage into the bay or moved offsite to avoid impeding access.

Installation of the lightering station in Iniskin Bay will require the placement of anchors for mooring bulk carriers. The spread anchor mooring system is located in approximately 50 ft to 70 ft of water, is approximately 2,300 by 1,700 ft in size, and consists of 10 anchors and 6 mooring buoys. Each leg of the anchor chain is approximately 500 ft in length and consists of 2-inch chain. A positioning anchor will be set on the seafloor with only enough slack in the chain to allow the buoy to move closer to the main anchor and minimize sagging of the main anchor chain. The large mass anchors are rock and concrete filled 40 ft x 8 ft x 8 ft shipping containers that are lowered to the seabed. The work would be performed from a barge with support tugs and a supply vessel. Placement of the mass anchors onto the seafloor is not expected to require modification of the bottom surface.

### 18.2.3 Transportation Corridor

#### *Access Roads*

The access road (figures T-001 through T-053) will have a 30-foot-wide top width (Figure TX-001), which will enable two-way traffic and support development and operational activities. The natural gas, concentrate, and return water pipelines and the fiber optic cable will be buried in or adjacent to the roadbed shoulder. The road extends 82 miles from the causeway at the port site to the mine site. The first portion of the road parallels, or in places replaces, the existing road from Williamsport to Pile Bay. From Pile Bay the road heads north and then turns west along the north side of Iliamna Lake. It bypasses the community of Pedro Bay to the north with a short access road connecting to the Pedro Bay airstrip. The road then continues west until it intersects the existing road that heads north from the Iliamna Airport before continuing on to the mine site.

Clearing limits and construction workspace for the transportation corridor will be limited to no more than 30 feet on either side of the permanent impact footprint for areas above the High Tide Line (HTL). Construction workspace for the transportation corridor below the HTL will be limited to no more than 5 feet, excluding the use of barges or other marine equipment required during construction. However, a 30-foot buffer was applied in calculating impacts to account for temporary sedimentation effects associated with construction. Only clean select fill and armor rock will be used for construction below the HTL to minimize sedimentation. A minimum of five intertidal equalization culverts, with a minimum diameter of 6 feet, will be placed in the intertidal zone. Clearing limits and construction workspace for the temporary roads to water extraction and material sites will be limited to no more than 10 feet on either side of the fill.

Material sites are designated by the abbreviation “MS” and are shown on the figures for each of the four road segments. Conceptual drawings for the transportation corridor are shown in figures TX-001 through TX-021.

### ***Concentrate and Return Water Pipelines***

The 6.25-inch concentrate pipeline and 8-inch water return pipeline will be buried in or adjacent to the road shoulder in a single trench along with the 12-inch gas pipeline. Both pipelines will be steel with HDPE liners. Pump stations for the concentrate line will be located at the mine site and along the road near Knutson Bay. The return water pipeline will have a single pump station located at the port facility. At bridged crossings the pipelines will be attached to the bridges, otherwise the pipelines will utilize trenching or horizontal directional drilling to cross streams.

### ***Drainage and Water Crossing Structures***

Stream crossings have been categorized based on stream width and fish presence to simplify stream crossing selection around a series of standardized conceptual culvert design categories. Larger streams and rivers fall under a bridge category for which site-specific designs have been developed. Stream categorization and crossing designs may be updated based on future field studies, particularly fish presence verification surveys.

### ***Bridges***

Bridge locations are shown in figures T-001 through T-053; conceptual level design drawings for each bridge are shown in figures BX-001 through BX-017.

## **18.2.4 Natural Gas Pipeline and Fiber Optic Cable**

Natural gas will be the primary energy source for the project. The natural gas pipeline will be designed to provide a gross flow rate of 50 million standard cubic feet per day. The steel pipeline will be designed to meet all required codes. It will be a nominal 12 inches in diameter, with a maximum outer diameter of 12.75 inches for the sections constructed with heavy wall pipe. A fiber optic cable will be ploughed in, or buried in a shallow trench, adjacent to the pipeline. The maximum diameter of the fiber optical cable will be 2 inches. The natural gas pipeline and fiber optic cable route are shown in figures G-001 through G-007.

The pipeline will connect to the existing natural gas pipeline infrastructure near Anchor Point on the Kenai Peninsula. A metering station will be constructed at the offtake point that connects to a compressor station on the east side of the Sterling Highway. The compressor station will feed a 104-mile subsea pipeline that will be constructed using heavy wall steel pipe designed to have negative buoyancy and provide erosion protection. Horizontal directional drilling will be used to install the pipeline from the compressor station out into waters that are deep enough to avoid navigation hazards. From this point, the heavy wall pipe will be trenched into the seafloor for the 78-mile



crossing of Cook Inlet. To provide for on-bottom stability and pipe protection the entire alignment will be backfilled after pipe installation. Material not naturally backfilled by tidal processes will be replaced using an extended reach backhoe or clamshell dredge. The pipeline will come ashore in a trench at Ursus Cove, then cross the Ursus Peninsula to Cottonwood Bay. The pipeline will be buried in a trench across the tidal flats and shallow waters of Cottonwood Bay and then head north into Iliamna Bay around Diamond Point before joining the road corridor where the port causeway comes ashore. Conceptual drawings for the natural gas pipeline and fiber optic cable alignment are shown in figures GX-001 through GX-013.

The marine portion of the pipeline will cross two identified fiber optic telecommunications cables, both of which belong to General Communications Incorporated (GCI). A detailed survey of the crossing will be completed prior to construction and a crossing plan will be developed in agreement with the cable owners and the required minimum vertical separation of 12 inches between the pipeline and cable will be maintained. Local excavation methods such as diver hand-jetting would be used for trenching and backfilling in proximity to the crossing to protect the cable. Options for the crossing include:

- Trenching and placing the pipeline over the top of cable if it is currently buried deep enough. A concrete separation mattress would be placed at the base of the trench prior to pipeline installation to protect the cable from pipeline settlement.
- Lowering the cable and then trenching and placing the pipeline over the top of the cable. A concrete separation mattress would be placed at the base of the trench prior to pipeline installation to protect the cable from pipeline settlement.
- Crossing under the cable with the pipeline. An engineered spool piece of pipe would be placed in the trench under the cable and then tied into the pipeline segment on either side. The trench would be backfilled to maintain the required vertical separation between the cable and pipeline.

At the port natural gas will be fed to the port site power station and used for site heating. From there the gas pipeline will follow the transportation corridor to the mine site. At bridged crossings the pipeline will be attached to the bridges, otherwise the pipeline will utilize trenching or horizontal directional drilling to cross streams.

## Tab 19. Project Purpose

### 19.1 Project Purpose

The Project's purpose is to produce commodities, including copper, gold, and molybdenum, from the Pebble Deposit in a manner that is commercially viable using proven technologies that are suitable for the remote project location. Because the lease area is not served by existing infrastructure, achieving the project purpose requires the construction of facilities for the mining and processing of the mineral-bearing rock and the construction of support and access infrastructure. The purpose of the natural gas pipeline from the Kenai Peninsula is to provide a long-term stable supply of natural gas to meet the energy needs of the Project by connecting to the existing regional gas supply network.

The need for the proposed Project is to meet increasing global demand for commodities such as copper, gold, and molybdenum.

### 19.2 Project Schedule

The Pebble Project will take approximately four years to construct, following receipt of all necessary permits and authorizations. Construction will include temporary elements to support construction of permanent facilities. Detail regarding the methodology and sequencing of Project construction is provided in the Project Description (Attachment B). A summary of the construction schedule is provided below. Actual years and the final duration of activities will be dependent on final engineering and the receipt of State permits required for mine construction and operations.

#### *Infrastructure*

- |  |                            |
|--|----------------------------|
| • Williamsport site capture (land by barge)            | May Y1                     |
| • Construct road to Diamond Point port                 | June Y1 – August Y1        |
| • Construct initial road towards mine site             | June Y1 – April Y2         |
| • Complete on-shore port site preparation              | July Y1 – September Y1     |
| • Final access road construction                       | November Y1 – September Y2 |
| • Construct major bridges                              | May Y2 - September Y2      |
| • Dredging of the entrance channel and turning basin   | May Y2 – August Y2         |
| • Installation of the causeway and barge dock          | July Y2 – October Y2       |
| • Construction of the on-shore port support facilities | May Y2 – October Y2        |
| • Access infrastructure complete                       | October Y2                 |
| • Construct concentrate pipeline terminus              | May Y3 - September Y3      |
| • Construct concentrate loadout                        | May Y4 - September Y4      |
| • Construct Anchor Point Compressor Station            | June Y3 - August Y3        |

- Cook Inlet sub-sea pipeline placement June Y2 - August Y2
- Pipeline construction along road segments November Y1 - September Y2
- Pipelines Complete September Y3

***Mine Site***

- Site Capture (establish construction infrastructure) April Y2 - August Y2
- Major Site Earthworks September Y2 – May Y4
- Mill & Infrastructure Construction May Y3 - October Y4
- Pit pre-production mining October Y3 – September Y4
- Commencement of Production October Y4

## Tab 20. Reasons for Discharge

Wetlands subject to U.S. Army Corps of Engineers (USACE) jurisdiction are present throughout the Pebble Project area, including the mine site, the Diamond Point Port, the transportation corridor, and the natural gas pipeline corridor, and are regulated as waters of the U.S. (WOUS) under Section 404 of the Clean Water Act (CWA). The marine components of the Project associated with Cook Inlet and other navigable waters are also regulated under Section 10 of the Rivers and Harbors Act (RHA).

The reason for the discharges into these regulated wetlands and waters is that the location of the Pebble Project and its associated facilities is determined directly by the location of the Deposit. To construct the mine and associated infrastructure, the deposition of fill into WOUS is unavoidable.

## Tab 21. Type(s) of Material(s) Discharged

Only clean fill would be used in the construction of the Project, with the exception of the bulk tailings that will be placed into the Bulk Tailings Storage Facility. Tailings will be contained within the facility and excess water and seepage from the facility will be captured and managed. Additional testing of construction materials will be completed prior to construction.

**Table 21-1. Estimated Port Dredge, Cut and Fill Volumes**

Description		Cut/ Dredge (CY)	Maintenance Dredge <sup>[c]</sup> (CY)	Fill: Unconsolidated Gravel (CY)	Fill: Pre-cast Concrete (CY)	Total Fill (CY)
Diamond Point Port	Wetlands/Waters above MHW <sup>[a]</sup>	0	0	1,707	0	1,707
	Waters below MHW <sup>[b]</sup>	1,100,000	700,000	282,000	26,000	308,000
	<b>Total Wetlands and Waters</b>	<b>1,100,000</b>	<b>700,000</b>	<b>283,707</b>	<b>26,000</b>	<b>309,707</b>

<sup>[a]</sup> Wetlands/waters subject to Section 404 jurisdiction only, defined as wetlands waters above the mean high water mark.

<sup>[b]</sup> Waters subject to both Section 404 and Section 10 jurisdiction, defined as wetlands waters below the mean high water mark.

<sup>[c]</sup> Maintenance dredging conducted periodically over project life. Total represents cumulative volume from four separate events.

**Table 21-2. Estimated Access Roads Cut and Fill Volumes**

Description		Fill: Unconsolidated Gravel (CY)	Fill: Rip Rap (CY)	Total Fill (CY)
Port Access Road	Wetlands/Waters above MHW <sup>[a]</sup>	76,000	258,000	334,000
	Waters below MHW <sup>[b]</sup>	8,000	521,000	529,000
	<b>Total Wetlands and Waters</b>	<b>84,000</b>	<b>779,000</b>	<b>863,300</b>

<sup>[a]</sup> Wetlands/waters subject to Section 404 jurisdiction only, defined as wetlands waters above the mean high water mark.

<sup>[b]</sup> Waters subject to both Section 404 and Section 10 jurisdiction, defined as wetlands waters below the mean high water mark.

**Table 21-3. Estimated Natural Gas Pipeline/Fiber Optic Cable Sidecast Volumes**

Description	Sidecast Volume (CY)
<b>Cook Inlet</b>	
State Coastal Waters <sup>[a]</sup>	227,460
Outer Continental Shelf <sup>[b]</sup>	607,324
<b>Cottonwood Bay</b>	
State Coastal Waters <sup>[a]</sup>	165,500
<b>Total Wetlands and Waters</b>	<b>1,000,284</b>

<sup>[a]</sup> Tidal waters between the high tide line (HTL) and the outer continental shelf (OCS). Subject to jurisdiction under Section 404 and Section 10.

<sup>[b]</sup> Tidal waters seaward from state coastal waters to the edge of the territorial sea. Subject to jurisdiction under Section 10 only.



## Tab 22. Surface Area and Linear Distance of Wetlands and Other Waters Filled

Surface area and linear distance values in this section are calculated using GIS feature classes listed in Table 22-1. GIS data are contained in Attachment E (POA2017-271\_PLP\_ProjectSpatialData.gdb) submitted in conjunction with this application. Specific feature classes used are identified below each table.

**Table 22-1. GIS Feature Classes**

Feature Class ID	Feature Class	Feature Class Type	Description
1	PLP_Impacts_Streams_062020	Line	Streams intersecting the temporary and permanent project footprints.
2	PLP_Impacts_Wetlands_062020	Polygon	Wetlands intersecting the temporary and permanent project footprints. Includes JDWET, HGM, and ENWI classifications.
3	PLP_LighteringLocation_062020	Point	Offshore lightering anchorage in Iniskin Bay.
4	PLP_MineSite_Footprints_062020	Polygon	Footprints for mine site components.
5	PLP_MineSite_Lines_062020	Line	Individual mine site components.
6	PLP_MineSite_MonitoringWells_062020	Point	Groundwater monitoring well locations.
7	PLP_Pipeline_InstallationCorridor_CI_062020	Polygon	Maximum width of anchor spread for installation of Cook Inlet pipeline segments.
8	PLP_PortSite_Footprints_062020	Polygon	Footprints for dock, lightering location, port terminal and dredge stockpiles.
9	PLP_PortSite_Lines_062020	Line	Individual port site components.
10	PLP_Power_Footprints_062020	Polygon	Footprints for compressor station and standalone portions of the natural gas pipeline. Other pipeline segments are included in the transportation corridor footprint.
11	PLP_Power_Lines_062020	Line	Natural gas pipeline centerline for full distance.
12	PLP_Trans_Footprints_062020	Polygon	Footprints for road/pipeline corridor and material sites.
13	PLP_Trans_Lines_062020	Line	Transportation corridor centerline from port to mine.
14	PLP_Trans_Stationing_062020	Point	Transportation corridor stations from port to mine.
15	PLP_Waterbody_Crossings_062020	Point	Bridge or culvert locations along transportation corridor.
16	PLP_WaterExtractionSite_AccessRoads_062020	Polygon	Footprint of temporary access roads to extraction sites
17	PLP_WaterExtractionSites_062020	Point	Water extraction sites along transportation corridor.

**Table 22-2a. Project Summary – Temporary and Permanent Footprints in Acres**

	Mine Site		Pipeline		Port Site		Transportation Corridor	
	Permanent	Temporary	Permanent	Temporary	Permanent	Temporary	Permanent	Temporary
Total Project Footprint (acres)	8,390.93	0.64	13.24	762.35	35.79	91.56	1,691.44	655.46
Wetland/Waters Footprint (acres)	2,162.53	0.43	-	644.38	3.69	88.11	65.70	40.16
Open Water <sup>[a]</sup> (acres)	111.05	0.03	-	639.42	3.49	88.11	27.53	14.08
Streams (linear feet)	524,793	227	-	11,449	205	516	29,829	20,488
Wetland/Waters above MHW <sup>[b]</sup> (acres)	2,162.53	0.43	-	6.42	0.20	0.08	46.89	32.94
Wetland/Waters below MHW <sup>[c]</sup> (acres)	-	-	-	637.96	3.49	88.04	18.82	7.21

<sup>[a]</sup> Open water acres defined as wetlands/waters mapped as WAT1 and WAT2 (includes all tidal waters below high tide line).

<sup>[b]</sup> Wetlands/waters subject to Section 404 jurisdiction only, defined as wetlands waters above the mean high water mark.

<sup>[c]</sup> Wetlands/waters subject to both Section 404 and Section 10 jurisdiction, defined as wetlands waters below the mean high water mark.

*GIS feature classes: 1, 2, 4, 8, 10, 12, 16*

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**Table 22-2b. Project Summary – Linear Distances in Feet and Miles**

	Transportation Corridor		Natural Gas Pipeline and Fiber Optic Cable		Concentrate and Return Water Pipelines	
	miles	feet	miles	feet	miles	feet
Linear distance above MHW <sup>[a]</sup>	80.4	424,512	86.47	456,538	78.25	413,160
Linear distance below MHW <sup>[b]</sup>	1.5	7,920	15.68	82,808	0.51	2,693
Linear distance in OCS <sup>[c]</sup>	-	-	61.90	326,837	-	-
<b>Total Distance</b>	<b>81.9</b>	<b>432,432</b>	<b>164.05</b>	<b>866,183</b>	<b>78.76</b>	<b>415,853</b>

<sup>[a]</sup> Linear distance of project component subject to Section 404 jurisdiction only. Distance calculated using component centerline.

<sup>[b]</sup> Linear distance of project component subject to both Section 404 and Section 10 jurisdiction. Distance calculated using component centerline.

<sup>[c]</sup> Linear distance of project component subject to Section 10 jurisdiction only. Distance calculated using component centerline.

*GIS feature classes: 9, 11, 13*

Tables 22-3a through 22-3e: Mine Site - Surface Area in Acres of Wetlands or Other Waters to be Filled

**Table 22-3a. Mine Site - Surface Area in Acres of Wetlands or Other Waters to be Filled**

ENWI	Feature																	
	Access Road	Area E Embankment	Area E Pyritic Tailings and PAG Waste Rock Storage Facility	Area E Seepage Recycle Pond	Area E Seepage Recycle Pond Embankment	Bulk Tailings Storage Cell	Concentrate Pump House	Construction Camp	Emergency Dump Pond	Emergency Dump Pond Embankment	Explosive Storage Site	Growth Medium Stockpile	Growth Medium Stockpile - Quarry B	Haul Road	Haul Truck Parking Area	Landfill and Incinerator	Mill Camp and Administration Buildings	Mill Laydown
PABH									2.13					0.01				
PEM1/2F																		
PEM1/ML1B	1.66	0.12	2.08	0.01		0.11								0.12				
PEM1/ML1C	5.02	0.06	0.58															
PEM1/ML1Cb	0.31																	
PEM1/SS1A	0.03	0.41	0.05			1.38								0.05				
PEM1/SS1B	1.94	14.75	7.33			57.64			0.35	0.09	0.06		0.71	4.29				0.2
PEM1/SS1C	0.11	4.44	4.57			6.86		0.06					0.08	2.79				
PEM1A	0.04					3.2												
PEM1B	2.89	20.27	24.8			151.88			2.66	0.09	0.03	0.04	0.48	6.86	0.02	0.01		0.3
PEM1Bb																		
PEM1C	2.06	8.13	22.88	0.14	0.23	43.36		0.59	0.45	0.01		0.08	0.47	6.16				6.68
PEM1Cb	0.26		0.14											0.55				
PEM1F	2.1	1.57				11.21			0.08		0.01			0.15				0.07
PEM1Fb						0.34								0.43				
PEM2F		0.05																
PEM2Fb																		
PSS1/3B						7.05								0.18				
PSS1/3C						0.41												
PSS1/EM1A	0.03					4.3												
PSS1/EM1B	9.48	51.71	87.92			245.93			1.79	0.39			8.71	27.89				2.01
PSS1/EM1Bb																		
PSS1/EM1C	0.46	15.22	11.93			23.12		0.05	0.11	0.14			0.51	4.98				0.05
PSS1/EM1Cb	0.24													0.66				
PSS1/EM1F																		
PSS1/EM1Fb																		
PSS1/ML1B	0.41					4.23									0.21			
PSS1A		0.93	1.48			11.97			0.32	0.01				0.21				
PSS1Ab														0.02				
PSS1B	5.33	15.76	46.47			427.39			1.21				4.8	27.84				1.75

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ENWI	Feature																	
	Access Road	Area E Embankment	Area E Pyritic Tailings and PAG Waste Rock Storage Facility	Area E Seepage Recycle Pond	Area E Seepage Recycle Pond Embankment	Bulk Tailings Storage Cell	Concentrate Pump House	Construction Camp	Emergency Dump Pond	Emergency Dump Pond Embankment	Explosive Storage Site	Growth Medium Stockpile	Growth Medium Stockpile Quarry B	Haul Road	Haul Truck Parking Area	Landfill and Incinerator	Mill Camp and Administration Buildings	Mill Laydown
PSS1Bb																		
PSS1C	0.02	2	4.56			20.13			0.02					4.8				
PSS1Cb	0.52													0.02				
PSS3/1B			0.12			0.66								0.22				
PSS3/1C														0.2				
PSS3/EM1B						0.16												
PSS3/EM1C		0.79	2.06															
PSS3/USC														0.3				
PSS3B		0.5																
PUBF	0.42	0.07							0.1					0.15				0.16
PUBH	2.86	0.51	0.41			1.84			2.34			0.17		0.89	0.03			0.54
PUBHb	0.34													0.93				0.22
PUS/EM1C		0.06																
PUSA	0.11																	
PUSC	0.48	1.15	0.16						0.28			0.54		3.39				0.18
R3UBF						0.03												
R3UBH	0.34	1.44	2.2	0.02	0.03	16.93		0.33	0.1	0.05			0.09	1.41				0.35
R3UBHb	0.02																	
R3USC		0.14				0.42		0.18						0.05				0.08
R4SBC	0.02	0.09	0.32			2.27								0.19				0.14
U-PUBH						0.38												
Total Wetlands	37.49	140.16	220.08	0.17	0.25	1043.19		1.2	11.94	0.79	0.09	0.83	15.86	95.73	0.26	0.01		12.74
Uplands	98.65	305.69	334.43	1.17	1.42	1357.71	0.98	5.57	28.22	4.9	8.93	109.91	61.02	586.19	4.67	9.12	7.46	38.31

GIS feature classes: 2, 4

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Table 22-3b. Mine Site - Surface Area in Acres of Wetlands or Other Waters to be Filled

ENWI	Feature																		
	Mill Site Container Yard	Mill Site Crusher and Conveyor	Mill Site Power Plant	Mill Site Process Plant	Open Pit	Open Pit Overburden Stockpile	Open Pit Overburden Stockpile Sediment Pond	Open Pit Sediment Pond	Open Pit Sediment Pond Embankment	Open Pit Water Management Pond	Open Pit Water Management Pond Embankment	Pond - Stockpile Sediment Control	Potable Water Well Field Road	Potable Water Well Pad	Potable Water WTP	Quarry B	Quarry C	Rom Pad	Sediment Pond
PABH																			
PEM1/2F																			
PEM1/ML1B		0.05			7.7	2.79	0.35			0.92	0.31								
PEM1/ML1C					1.59	0.27				0.19									
PEM1/ML1Cb							0.57												
PEM1/SS1A																			
PEM1/SS1B					6.99	1.23	0.42				0.34						1.43	0.38	
PEM1/SS1C					1.07			0.77	0.38					0.01		0.6			
PEM1A											0.06								
PEM1B		0.1			10.2	2.45	0.31	0.05		1.16								0.03	
PEM1Bb					0.18														
PEM1C	0.66				14.65	1.35		0.02	0.13				0.06			2.62			0.78
PEM1Cb							1.48											0.1	
PEM1F		0.01			0.1	0.02		0.23	0.18							0.2			0.01
PEM1Fb																			
PEM2F					0.9														
PEM2Fb						0.74			0.04										
PSS1/3B																			
PSS1/3C			0.25																
PSS1/EM1A																			
PSS1/EM1B	0.13	0.2			36.77	8.25	2.21		0.01	1.37	1.72	0.22	0.19			0.15	0.11	0.62	
PSS1/EM1Bb					0.87			0.5	0.01										
PSS1/EM1C					4.6	0.34		0.05					0.06	0.06		5.19	1.78		1.1
PSS1/EM1Cb					0.45		0.26	0.16	0.34										
PSS1/EM1F																			
PSS1/EM1Fb								0.17	0.1										
PSS1/ML1B					3.69	0.39				0.14	0.4								
PSS1A																			
PSS1Ab																			
PSS1B		0.42	0.41		19.67	7.77	0.85			0.78	0.34	0.29				4.16	0.7		0.94
PSS1Bb					0.25														

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ENWI	Feature																		
	Mill Site Container Yard	Mill Site Crusher and Conveyor	Mill Site Power Plant	Mill Site Process Plant	Open Pit	Open Pit Overburden Stockpile	Open Pit Overburden Stockpile Sediment Pond	Open Pit Sediment Pond	Open Pit Sediment Pond Embankment	Open Pit Water Management Pond	Open Pit Water Management Pond Embankment	Pond - Stockpile Sediment Control	Potable Water Well Field Road	Potable Water Well Pad	Potable Water WTP	Quarry B	Quarry C	Rom Pad	Sediment Pond
PSS1C					0.52	0.52					0.05		0.02			7.76	1.03		
PSS1Cb					0.43														
PSS3/1B					0.02														
PSS3/1C																			
PSS3/EM1B		0.08																	
PSS3/EM1C																1.28			
PSS3/USC				0.07															
PSS3B																0.25			
PUBF					0.66														
PUBH					7.52	4.31	0.04	0.03	0.02	0.83				0.05				0.68	
PUBHb					1.96	2	0.75	0.08	0.1										
PUS/EM1C					0.18	0.04													
PUSA																			
PUSC					0.46	0.1													
R3UBF																			
R3UBH		0.05			1.51	0.5	0.09	0.03		0.1	0.19					0.04		0.07	0.14
R3UBHb																			
R3USC					0.15														
R4SBC		0.01			0.13	0.02													
U:PUBH																			
Total Wetlands	0.79	0.92	0.66	0.07	123.21	33.13	7.32	2.07	1.32	5.5	3.4	0.51	0.33	0.13		22.25	5.05	1.88	2.98
Uplands	4.3	20.68	21.58	35.67	485.79	157.48	6.71	0.04	0.14	25.92	29.3	7.71	2.16	0.56	1.2	534.08	298.28	5.74	8.38

GIS feature classes: 2, 4

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Table 22-3c. Mine Site - Surface Area in Acres of Wetlands or Other Waters to be Filled

ENWI	Feature																		
	Mill Site Container Yard	Mill Site Crusher and Conveyor	Mill Site Power Plant	Mill Site Process Plant	Open Pit	Open Pit Overburden Stockpile	Open Pit Overburden Stockpile Sediment Pond	Open Pit Sediment Pond	Open Pit Sediment Pond Embarkment	Open Pit Water Management Pond	Open Pit Water Management Pond Embarkment	Pond - Stockpile Sediment Control	Potable Water Well Field Road	Potable Water Well Pad	Potable Water WTP	Quarry B	Quarry C	Rom Pad	Sediment Pond
PABH																			
PEM1/2F																			
PEM1/ML1B		0.05			7.7	2.79	0.35		0.92	0.31									
PEM1/ML1C					1.59	0.27			0.19										
PEM1/ML1Cb							0.57												
PEM1/SS1A																			
PEM1/SS1B					6.99	1.23	0.42			0.34							1.43	0.38	
PEM1/SS1C					1.07			0.77	0.38					0.01		0.6			
PEM1A										0.06									
PEM1B		0.1			10.2	2.45	0.31	0.05	1.16									0.03	
PEM1Bb					0.18														
PEM1C	0.66				14.65	1.35		0.02	0.13				0.06			2.62			0.78
PEM1Cb							1.48											0.1	
PEM1F		0.01			0.1	0.02		0.23	0.18							0.2			0.01
PEM1Fb																			
PEM2F					0.9														
PEM2Fb						0.74			0.04										
PSS1/3B																			
PSS1/3C			0.25																
PSS1/EM1A																			
PSS1/EM1B	0.13	0.2			36.77	8.25	2.21		0.01	1.37	1.72	0.22	0.19			0.15	0.11	0.62	
PSS1/EM1Bb					0.87			0.5	0.01										
PSS1/EM1C					4.6	0.34		0.05					0.06	0.06		5.19	1.78		1.1
PSS1/EM1Cb					0.45		0.26	0.16	0.34										
PSS1/EM1F																			
PSS1/EM1Fb								0.17	0.1										
PSS1/ML1B					3.69	0.39			0.14	0.4									
PSS1A																			
PSS1Ab																			
PSS1B		0.42	0.41		19.67	7.77	0.85		0.78	0.34	0.29					4.16	0.7		0.94
PSS1Bb					0.25														

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ENWI	Feature																		
	Mill Site Container Yard	Mill Site Crusher and Conveyor	Mill Site Power Plant	Mill Site Process Plant	Open Pit	Open Pit Overburden Stockpile	Open Pit Overburden Stockpile Sediment Pond	Open Pit Sediment Pond	Open Pit Sediment Pond Embankment	Open Pit Water Management Pond	Open Pit Water Management Pond Embankment	Pond - Stockpile Sediment Control	Potable Water Well Field Road	Potable Water Well Pad	Potable Water WTP	Quarry B	Quarry C	Rom Pad	Sediment Pond
PSS1C					0.52	0.52					0.05		0.02			7.76	1.03		
PSS1Cb					0.43														
PSS3/1B					0.02														
PSS3/1C																			
PSS3/EM1B		0.08																	
PSS3/EM1C																1.28			
PSS3/USC				0.07															
PSS3B																0.25			
PUBF					0.66														
PUBH					7.52	4.31	0.04	0.03	0.02	0.83				0.05				0.68	
PUBHb					1.96	2	0.75	0.08	0.1										
PUS/EM1C					0.18	0.04													
PUSA																			
PUSC					0.46	0.1													
R3UBF																			
R3UBH		0.05			1.51	0.5	0.09	0.03		0.1	0.19					0.04		0.07	0.14
R3UBHb																			
R3USC					0.15														
R4SBC		0.01			0.13	0.02													
U:PUBH																			
Total Wetlands	0.79	0.92	0.56	0.07	123.21	33.13	7.32	2.07	1.32	5.5	3.4	0.51	0.33	0.13		22.25	5.05	1.88	2.98
Uplands	4.3	20.68	21.58	35.67	485.79	157.48	6.71	0.04	0.14	25.92	29.3	7.71	2.16	0.56	1.2	534.08	298.28	5.74	8.38

GIS feature classes: 2, 4

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Table 22-3d. Mine Site - Surface Area in Acres of Wetlands or Other Waters to be Filled

ENWI	Feature								Grand Total
	TSF South Embankment Sediment Pond	TSF South Embankment Sediment Pond Embankment	TSF South Embankment Seepage Recycle Pond	TSF South Embankment Seepage Recycle Pond Embankment	Water Management Pond	Water Management Pond Embankment	Water Treatment Plant 1	Water Treatment Plant 2	
PABH									2.13
PEM1/2F					0.3				0.3
PEM1/ML1B			0.42	0.02		0.53			17.59
PEM1/ML1C					0.23	0.16			8.19
PEM1/ML1Cb									0.88
PEM1/SS1A									2.82
PEM1/SS1B			0.52	0.35	1.16				112.88
PEM1/SS1C	0.07				0.08				30.49
PEM1A						0.02			3.31
PEM1B			0.06		2.23	0.7	0.75		247.96
PEM1Bb									0.18
PEM1C	0.04	0.01			22.51	3.13			148.23
PEM1Cb						0.04			2.57
PEM1F					2.19	0.12			18.34
PEM1Fb									0.77
PEM2F									0.95
PEM2Fb									0.78
PSS1/3B					0.52				8.35
PSS1/3C									0.66
PSS1/EM1A									5.37
PSS1/EM1B	0.99	1.01	0.87	0.3	6.73	0.31	0.26		598.18
PSS1/EM1Bb									1.38
PSS1/EM1C	0.04				20.17	4.99			100.65
PSS1/EM1Cb									2.1
PSS1/EM1F					3.94	0.03			3.98
PSS1/EM1Fb									0.27
PSS1/ML1B									9.66
PSS1A	0.05				0.13			0.05	15.96
PSS1Ab						0.01			0.03
PSS1B	0.98	0.16	0.98	0.13	5.23	0.02	0.1		637.15
PSS1Bb									0.25
PSS1C					9.08	0.16			58.89

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ENWI	Feature								Grand Total
	TSF South Embarkment Sediment Pond	TSF South Embarkment Sediment Pond Embarkment	TSF South Embarkment Seepage Recycle Pond	TSF South Embarkment Seepage Recycle Pond Embankment	Water Management Pond	Water Management Pond Embankment	Water Treatment Plant 1	Water Treatment Plant 2	
PSS1Cb					0.06	0.28			1.31
PSS3/1B					1.97				3.24
PSS3/1C					0.06				0.26
PSS3/EM1B									0.24
PSS3/EM1C					1.02	0.52			5.67
PSS3/USC									0.37
PSS3B									0.89
PUBF								0.02	1.59
PUBH					11.64	1.2			39.29
PUBHb					1.09				7.5
PUS/EM1C									0.28
PUSA					0.11				0.23
PUSC					3.05	0.21		0.34	10.35
R3UBF									0.08
R3UBH	0.25	0.04	0.14	0.08	10.34	0.94		0.04	44.09
R3UBHb						0.08			0.1
R3USC	0.03				0.15	0.09			1.6
R4SBC								0.04	3.81
U:PUBH									0.38
Total Wetlands	2.46	1.21	2.99	0.87	104	13.55	1.11	0.5	2162.53
Total Uplands	1.95	0.93	1.06	2.74	653.67	230.32	1.56	14.42	6228.45

GIS feature classes: 2, 4

**Table 22-3e. Mine Site - Surface Area in Acres of Wetlands or Other Waters to be Filled - Totals**

Sum of Acres	
NWI	Acres
PABH	2.13
PEM1/2F	0.3
PEM1/ML1B	17.59
PEM1/ML1C	8.19
PEM1/ML1Cb	0.88
PEM1/SS1A	2.82
PEM1/SS1B	112.88
PEM1/SS1C	30.49
PEM1A	3.31
PEM1B	247.96
PEM1Bb	0.18
PEM1C	148.23
PEM1Cb	2.57
PEM1F	18.34
PEM1Fb	0.77
PEM2F	0.95
PEM2Fb	0.78
PSS1/3B	8.35
PSS1/3C	0.66
PSS1/EM1A	5.37
PSS1/EM1B	598.18
PSS1/EM1Bb	1.38
PSS1/EM1C	100.65
PSS1/EM1Cb	2.1
PSS1/EM1F	3.98
PSS1/EM1Fb	0.27

Sum of Acres	
NWI	Acres
PSS1/ML1B	9.66
PSS1A	15.96
PSS1Ab	0.03
PSS1B	637.15
PSS1Bb	0.25
PSS1C	58.89
PSS1Cb	1.31
PSS3/1B	3.24
PSS3/1C	0.26
PSS3/EM1B	0.24
PSS3/EM1C	5.67
PSS3/USC	0.37
PSS3B	0.89
PUBF	1.59
PUBH	39.29
PUBHb	7.5
PUS/EM1C	0.28
PUSA	0.23
PUSC	10.35
R3UBF	0.08
R3UBH	44.09
R3UBHb	0.1
R3USC	1.6
R4SBC	3.81
U:PUBH	0.38
<b>Total Wetlands/Waters</b>	<b>2,162.53</b>

GIS feature classes: 2, 4

Table 22-4a. Access Road - Surface Area in Acres of Wetlands or Other Waters to be Filled

ENWI	Roads			Material Sites																										Grand Total	
	Explosive Storage Road	Access Road - Mine to Diamond Point Port	Pedro Bay Airport Spur	MS-D15	MS-D16	MS-D17	MS-D18	MS-D19	MS-D20	MS-D21	MS-D22	MS-D23	MS-D24	MS-D25	MS-D26	MS-D27	MS-D28	MS-D31	MS-D32	MS-E06	MS-E07	MS-E08	MS-E09	MS-E10	MS-E11	MS-E12	MS-E13	MS-E14	MS-T00		MS-T01
E1UBL		5.03																													5.03
E2EM1P		0.14																													0.14
E2USN		5.33																													5.33
E2USP		10.42																													10.42
L1UBH		0.14																													0.14
L2USC		<0.01																													<0.01
PEM1/ML1B		<0.01																													<0.01
PEM1/ML1C		0.26																													0.26
PEM1/SS1B		0.15																													0.15
PEM1/SS1C	0.22	1.2																													1.42
PEM1A		0.09																													0.09
PEM1B		1.49																													1.49
PEM1C		1.91							0.11						0.5	0.1															2.62
PEM1Cb		0.28																													0.28
PEM1F	0.19	0.01																													0.2
PFO1/SS1B		2.5																													2.5
PFO1/SS1C		0.94																													0.94
PFO1B		0.43																													0.43
PFO1C		0.09																													0.09
PFO4/1B		0.02																													0.02
PFO4/SS1B		0.85																													0.85
PSS1/3B		0.11																													0.11
PSS1/3C		<0.01																													<0.01
PSS1/4A		0.03																													0.03
PSS1/4B		1.23																													1.23
PSS1/EM1B	0.03	6.58							0.14						0.14																6.89
PSS1/EM1C		2.89							0.03																						2.92
PSS1/EM1Cb		0.04																													0.04
PSS1/EM2C		1.05																													1.05

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	Roads			Material Sites																												Grand Total
	Explosive Storage Road	Access Road - Mine to Diamond Point Port	Pedro Bay Airport Spur	MS-D15	MS-D16	MS-D17	MS-D18	MS-D19	MS-D20	MS-D21	MS-D22	MS-D23	MS-D24	MS-D25	MS-D26	MS-D27	MS-D28	MS-D31	MS-D32	MS-E06	MS-E07	MS-E08	MS-E09	MS-E10	MS-E11	MS-E12	MS-E13	MS-E14	MS-T00	MS-T01		
ENWI																																
PSS1/FO4B		0.17																													0.17	
PSS1/ML1B		0.19																													0.19	
PSS1A		0.44																													0.44	
PSS1B	0.12	9.37													0.12															0.26	9.87	
PSS1C		2.78							0.04																						2.82	
PSS1Cb		0.2																													0.2	
PSS3/1B		0.02																													0.02	
PSS4/1B		0.49																													0.49	
PSS4B		0.17										0.03																			0.2	
PUBF		0.01													0.2																0.21	
PUBH	0.02	0.01													0.12																0.15	
PUBHb		0.13																													0.13	
PUBHx														3.04																	3.04	
PUSC		0.23																													0.23	
R1UST		0.02																													0.02	
R3UBH		1.75		0.01					0.04	0.04				0.05	0.01											0.02	0.01				1.93	
R3USC		0.45																													0.45	
R4SBC		0.41											0.02	0.02	0.01																0.46	
Total Wetlands	0.58	60.05		0.01					0.36	0.04		0.03	0.02	0.07	4	0.24											0.02	0.01		0.26	65.69	
Total Uplands	3.24	1017.25	5.82	19.11	21.09	37.25	41.18	21.41	35.1	36.13	12.07	5.58	25.25	7.58	8.09	12.14	12.89	45.06	24.42	27.83	45.45	15.86	27.3	6.49	24.8	33.1	16.23	19.68	6.51	11.82	1625.73	

GIS feature classes: 2, 12

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**Table 22-4b. Access Roads – Surface Area in Acres of Wetlands or Other Waters to be Temporarily Filled**

ENWI	Acres
E1UBL	3.5
E2EM1P	0.09
E2USN	2.78
E2USP	2.23
L1UBH	0.21
L2USC	0.09
PEM1/ML1B	0.05
PEM1/ML1C	0.23
PEM1/SS1B	0.22
PEM1/SS1C	1.08
PEM1A	0.13
PEM1B	0.6
PEM1C	2.77
PEM1Cb	0.25
PEM1F	0.23
PEM2F	<0.01
PFO1/EM1B	<0.01
PFO1/SS1B	1.11
PFO1/SS1C	0.68
PFO1B	0.25
PFO1C	0.14
PFO4/1B	0.06
PFO4/SS1B	0.56
PSS1/3B	0.06
PSS1/3C	0.08
PSS1/4A	0.07
PSS1/4B	1.14
PSS1/EM1B	4.75

ENWI	Acres
PSS1/EM1C	2.75
PSS1/EM1Cb	0.01
PSS1/EM1F	<0.01
PSS1/EM2C	0.63
PSS1/FO4B	0.06
PSS1/ML1B	0.1
PSS1A	0.17
PSS1B	4.74
PSS1C	1.74
PSS1Cb	0.04
PSS3/1B	0.06
PSS3/1C	<0.01
PSS3/EM1B	0.1
PSS4/1B	0.15
PSS4/3B	0.78
PSS4B	0.17
PUBF	0.06
PUBH	0.18
PUBHb	0.14
PUBHx	0.49
PUSC	0.29
R1UBH	0.07
R1UST	0.08
R3UBH	2.87
R3USC	0.58
R4SBC	0.49
<b>Total Wetlands</b>	<b>40.16</b>
Total Uplands	615.30

GIS feature classes: 2, 12

**Table 22-5a. Port Site - Surface Area in Acres of Wetlands or Other Waters to be Filled**

ENWI	Caissons	Concrete Supports	Port Site Terminal	Dredge Stockpile	Sea Floor Anchor - Lightering Location	Grand Total
<b>Section 10</b>						
E1UBL	3.35	0.07			0.07	3.49
<b>Section 404</b>						
E2USP			<0.01			<0.01
PSS1/3B			0.19			0.19
R4SBC			<0.01			<0.01
<b>Total Wetlands and Waters</b>	<b>3.35</b>	<b>0.07</b>	<b>0.20</b>	<b>0.00</b>	<b>0.07</b>	<b>3.69</b>
Total Uplands			16.27	15.83		32.10

GIS feature classes: 2, 8

**Table 22-5b. Port Site – Surface Area in Acres of Wetlands or Other Waters to be Temporarily Filled**

ENWI	Navigation Channel/ Turning Basin Dredge Area	Caisson Dredge Area	Port Site Terminal	Grand Total
<b>Section 10</b>				
E1UBL	71.42	4.06	12.53	88.01
E2USN			0.01	0.01
E2USP			0.01	0.01
<b>Section 404</b>				
E2USP			0.07	0.07
R4SBC			0.01	0.01
<b>Total Wetlands and Waters</b>	<b>71.42</b>	<b>4.06</b>	<b>12.63</b>	<b>88.11</b>
Total Uplands			3.45	3.45

GIS feature classes: 2, 8

**Table 22-6. Natural Gas Pipeline/Fiber Optic Cable – Surface Area in Acres of Wetlands or Other Waters to Be Temporarily Filled**

Row Labels	Work Area - Kenai Peninsula	Work Area - Mine Site	Work Area - Ursus Cove to Cottonwood Bay	HDD Pullback Work Area	Cook Inlet Crossing Seabed Impact Areas	Cottonwood Bay Seabed Impact Areas	Grand Total
<b>Section 10</b>							
E1UBL						67.49	67.49
E2USN						1.61	1.61
M1UBL					568.70		568.70
M2USN					0.15		0.15
<b>Section 404</b>							
E2RSP			0.05				0.05
E2USN			<0.01				<0.01
E2USP			0.12				0.12
M2USN			0.21				0.21
M2USP			0.09				0.09
PEM1/SS1B			0.33				0.33
PEM1/SS1C			0.05				0.05
PEM1B			0.17				0.17
PEM1Cb		0.18					0.18
PSS1/EM1B		0.03	0.14				0.17
PSS1/EM1C			0.58				0.58
PSS1/EM1Cb		0.13					0.13
PSS1B			3.30				3.30
PSS1C		0.02	0.03				0.05
PUBF			0.02				0.02
PUSC		0.15					0.15
R3UBH		0.01	0.70				0.72
R3USC			0.01				0.01
R4SBC		0.01	0.08				0.09
<b>Grand Total</b>	<b>0.00</b>	<b>0.54</b>	<b>5.88</b>	<b>0.00</b>	<b>568.85</b>	<b>69.10</b>	<b>644.38</b>
Total Uplands	0.54	27.08	89.98	0.39			117.97

GIS feature classes: 2, 10



## Tab 23. Description of Avoidance, Minimization, and Compensation

The Project design presented by PLP in this application includes numerous measures to avoid and minimize impacts to wetlands and other WOUS, air quality, wildlife and aquatic habitat, areas of cultural significance, and areas of known subsistence use. Measures that will reduce these impacts include the following:

### Project Design Features

- The project plan has been limited to mining the near-surface portion of the Pebble Deposit. This has significantly reduced the footprint of the open pit, TSFs, and mine facilities, as well as eliminated the need for a permanent waste rock storage facility.
- The layout was designed to consolidate the majority of the site infrastructure in a single drainage, the North Fork Koktuli, avoid the placement of waste rock or tailings in the Upper Talarik Creek drainage, and to minimize impacts to spawning habitat in the middle reaches of the South Fork Koktuli.
- Only clean fill would be used in the construction of the Project, with the exception of the bulk tailings that will be placed into the Bulk Tailings Storage Facility. Tailings will be contained within the facility and excess water and seepage from the facility will be captured and managed. Additional testing of construction materials will be completed prior to construction.
- The locations of overburden storage facilities, water management ponds, roads, and pipelines have been optimized to minimize the footprint in WOUS.
- Co-location of the road and pipelines (natural gas, concentrate, return water) reduces wetlands and other impacts and removes the need for a separate corridor. The use of a concentrate pipeline eliminates the need to transport concentrate by truck, reducing traffic volumes and associated impacts.
- The Diamond Point Port design includes a caisson-supported dock facility rather than an earth-filled causeway or pile-supported dock. The caisson design significantly reduces the WOUS footprint compared to an earth-filled design, and effectively eliminates in-water impact noise generated by pile driving that might adversely affect sensitive marine species.
- A natural gas pipeline and gas-fired electrical generation to power the Project reduce air emissions and the need to transport and store diesel fuel for power generation.
- The segregated pyritic tailings storage facility (TSF), a fully lined facility, minimizes water quality impacts and facilitates closure. At closure, pyritic tailings will be backhauled to the pit for sub-aqueous storage in the pit lake and the pyritic TSF will be reclaimed.



- Pyritic waste rock will be stored in the pyritic TSF during operations, after which it will be backhauled to the pit for sub-aqueous storage in the pit lake. This avoids the need for post-closure management of the pyritic TSF or a separate pyritic waste rock facility.
- The project design uses flattened downstream slopes of 2.6 horizontal:1 vertical or better for the tailings storage facilities and water management pond to improve PLP's proposed static factor of safety is higher than the industry standard.
- Underdrains will be constructed beneath the main WMP and pyritic TSF to achieve hydraulic containment of groundwater and promote seepage collection and drainage beneath the liner systems. The aggregate underdrains will be oversized to allow for higher than expected seepage flows or potential cementation of the materials during the life of the facility.
- PLP will establish an independent engineering review panel to review the design, construction, operation, and closure of the tailings and water storage facilities.
- Excess water will be stored in a fully lined water management pond with embankments founded on bedrock. The pond will be sized to handle excess precipitation resulting from storm events and accumulation over a series of wet years, removing the need to store excess water in the TSFs.
- The use of an advanced surplus water release strategy to distribute water to down gradient streams and reduce the effect of flow changes on fish habitat.
- Natural gas generated shore power will be provided for vessels that are docked at the port.

#### **Protection of Wetlands and Waters**

- PLP has designed the Project to minimize impacts to wetlands and with reclamation in mind. At closure wetlands will be restored where practicable.
- PLP and all contractors will develop and implement Storm Water Pollution Prevention Plans (SWPPPs) in accordance with State guidelines and follow BMPs for stormwater management to minimize the transfer of sediment and other pollutants in stormwater associated with project activities. The SWPPP will be in place prior to construction commencement. The SWPPP will include, but is not limited to, information such as:
  - Drainage patterns and approximate slopes anticipated after major grading activities.
  - Locations of Waters of the United States around the site.
  - Locations of any sensitive or special areas.
  - Locations and descriptions of structural and nonstructural controls.
  - Areas to be disturbed and those not disturbed.
  - Locations where stabilization activities are expected to occur.
  - Locations of material, waste, borrow, equipment and material storage areas.

- The location and description of any facilities such as crushers, concrete plants, or other support infrastructure.
- All silt fences and other BMPs will be established as per State guidelines
- Specific structural and non-structural BMPs to be implemented may include, but are not limited to:
  - Erosion control BMPs
    - Temporary or permanent seeding with mulch
    - Mulching
    - Applying tackifier
    - Installing rolled erosion control products
    - Applying compost blankets
    - Preserving existing grass, trees, or other vegetation
  - Sediment control BMPs
    - Check dams
    - Temporary sediment traps
    - Brush barriers
    - Fiber rolls
    - Silt fences
    - Tracking control at exits and entrances
    - Drain inlet protection
    - Temporary Sediment Traps, Ponds and Basins
  - Storm water management BMPs:
    - Velocity controls
    - Interception /diversion ditches
    - Slope drains
    - Storm water conveyance channels
  - Pollution Prevention BMPs
    - Ensuring proper disposal of construction site waste materials
    - Preventing exposure of construction site materials, debris, and chemicals to storm water
    - Treating or disposing of sanitary wastes in accordance with state requirements
    - Fueling and maintaining vehicles without polluting

- Developing spill prevention and response practices
- Employee training, good housekeeping, and adaptive management programs
- PLP will develop and implement an Erosion and Sediment Control Plans (ESCP) for the project and follow BMPs for erosion and sediment control. The ESCP will be in place prior to construction commencement.
- Specific erosion control measures to be implemented include, but are not limited to:
  - The use of silt fences and silt curtains around project facilities.
  - The use of cofferdams and sediment ponds to trap and settle sediment from project facilities.
  - PLP will use interim seeding and other BMPs to address surface runoff and erosion from overburden stockpiles during operations.
- The construction area (temporary disturbance footprint) associated with the project will be marked, using silt fencing (as appropriate), flagging or other methods, prior to brush clearing and construction activities.
- The project will use only clean non-pit quarried rock, or non-acid-generating (NAG) pit waste rock that is confirmed not to be neutral metal leaching, in site construction.
- The bulk tailings will only be stored in uplands and wetlands behind the bulk TSF embankments and seepage water will be collected and reused or treated prior to discharge.
- Detailed characterization of all quarry bedrock and material sites (mine site and transportation corridor) and open pit overburden materials will be completed prior to construction.
- All potentially acid-generating (PAG) and/or metal leaching waste rock will be stored in the pyritic TSF and placed back into the open pit at closure.
- The pyritic TSF will be a fully lined facility to minimize water quality impacts during operations and facilitate closure by allowing the complete recovery of pyritic tailings for placement back into the open pit.
- Construction laydown areas will be reused as material stockpiles or other storage facilities to minimize project footprint.
- Construction of roads at wetlands/stream crossings will be kept to the narrowest possible footprint.
- The road will utilize crossing rivers at a right angle where feasible to minimize impacts in the riparian areas.
- There will be no relocation of active stream channels in the transportation corridor.
- The material sites were located to avoid wetlands to the maximum extent feasible.

- The natural gas pipeline will use horizontal directional drilling (HDD) to access deep water from the compressor station area to avoid shoreline impacts from trenching on the Kenai Peninsula.
- Materials sidecast from trenches above High Tide Line (HTL) and outside the transportation corridor will be segregated by top organics and subsurface layers and will be replaced back in the trench in order which they were removed.
- Material sidecast from trenching of the pipelines above HTL will be placed within the footprint of the permanent fill or in uplands.
- Trench plugs will be utilized where required for pipeline installation to minimize the flow of water through the trench and the associated impacts to wetlands.
- Fill placed below the HTL will consist of select rock fill and armor rock protection. Select rock fill will consist of durable, coarse free-draining material with minimal fines to minimize sedimentation.
- No dredged material from the Diamond Point port will be stored below the HTL or discharged to other Waters of the US.
- Road designs, including culvert placement and design will be completed and construction will be monitored by professional engineers with appropriate experience. Culverts will be monitored over the project life to identify any problems, and any identified will be addressed promptly.
- Road designs, including bridges will be completed and construction will be monitored by professional engineers with appropriate experience. Bridge designs will minimize the footprint below the OHW mark to the extent practicable given the load design criteria. Hydrologic surveys will be completed prior to final design to confirm they accommodate for flow under normal and flood conditions.
- PLP will implement measures in the design and construction of the access road in jurisdictional wetlands or open waters to attenuate flood flows, prevent extreme ponding or drying, maintain floodplain functions, maintain aquatic life movement, maintain sediment transport, and other functions provided by wetlands and open waters. Measures will include installing floodplain culverts, the use of permeable roadbeds for road construction in wetlands, and the use of oversized culverts where appropriate.
- Equalization culverts will be installed and strategically located to facilitate surface water movement within wetland areas.
  - Culverts will be set with the invert below grade or slightly below base water level to maintain equal water levels on both side of a fill.
  - In areas with a natural slope and surface water flow, the culvert will be set a minimum of 30 percent of the culvert diameter below grade and set with a grade to match the natural ground surface.

- Equalization culverts used in intertidal areas to maintain ebb and flow of marine waters will be sized and set to promote a near-natural rate of fill and draining of enclosed marine areas.
- To the extent possible, marine equalization culverts will be designed to allow passage of marine aquatic life.
- Marine culverts will be constructed with materials suitable for use in marine conditions.
- A typical specification for shot rock that would be used for the permeable roadbeds in wetlands is: Maximum stone size to be 30 inch and not more than 20% shall be smaller than 6 inch. Material passing the No. 200 sieve shall not exceed 2% by weight. Rock must be competent and resistant to degradation during placement and compaction.
- Water used for hydrostatic testing of pipelines will be obtained from and discharged back to sources local to the section of pipeline being tested, thereby minimizing the potential for the mobilization of invasive species.
- Two separate operations water treatment plants (WTPs) will be constructed to avoid comingling mine water and contact water, and optimize treated water quality.
- PLP will use non-toxic dust palliatives (i.e., substances applied to a road surface) to reduce airborne dust impacts to wetlands and waters.
- PLP will implement measures, that may include the use of dust suppressants, to reduce dust from the bulk TSF during and after closure until the tailings can be permanently capped.
- PLP will wash heavy equipment to reduce dust that collects on the wheels, body, and undercarriage of heavy equipment.
- The concentrate conveyor will be fully enclosed to contain dust and shed snow.
- The barge loader will be fitted with a mechanical dust collection system and each barge will have a cover system to minimize fugitive dust and protect the concentrate from precipitation. During lightering operations, the barge's internal system will retrieve and convey concentrate to the bulk carrier via a self-discharging boom conveyor. The boom will be fully enclosed and equipped with a telescoping spout and will have mechanical dust collection to prevent spillage of fugitive dust.
- PLP will measure hydrocarbon concentrations and related compounds in surface and groundwater during the periodic water quality monitoring events where appropriate as identified in the Project monitoring plans.

### **Restoration of Temporary Impacts**

- PLP will update and comply with all measures outlined in the draft Restoration Plan submitted to USACE. Measures PLP will implement to meet the restoration goals and objectives include:

- Minimize construction impacts on temporary work areas by preserving the native vegetation root mass where practical and safe.
  - Use proper soil management techniques, including stripping, stockpiling, and reapplying topsoil to establish surface conditions that would enhance the development of diverse, stable, and self-generating native plant communities.
  - Establish stable surface and drainage conditions with the use of erosion control measures as needed to minimize soil erosion and off-site sedimentation.
  - Re-establish terrain elevations that blend with the surrounding landscape.
  - Establish a permanent plant cover of native shrubs and grasses.
  - Use certified seed (11 Alaska Administrative Code [AAC] 34.075) mixtures as suggested in the Alaska revegetation and erosion control guides.
  - Clean up trash or other construction debris (e.g., flagging, survey lath, plastics).
  - Monitor during and after construction phases to ensure the achievement of short- and long-term restoration objectives.
- Streambank restoration will incorporate bioengineering techniques (e.g., root wads, bundled water-tolerant willows and other measures outlined in the Streambank Revegetation and Protection: A Guide for Alaska [ADF&G 2005]), where possible, to maintain natural velocities, prevent bank erosion, and promote healthy riparian system functions that are important to aquatic species.

### **Reclamation of Permanent Impacts**

- Where feasible, mine facilities will be reclaimed in such a manner as to create new wetland areas and ponds.
- Overburden removed during construction will be stockpiled for use in reclamation in compliance with State requirements.
- The Reclamation and Closure Plan will be updated on a regular basis and regular site compliance audits will be conducted as required by state regulations.
- The project will fully bond for reclamation and closure costs before commencing construction. Bonding amounts will be updated on a regular basis to address any changes.
- A dry closure of the bulk tailings storage facility (TSF) will be implemented to reduce both the likelihood and consequence of potential TSF failure post-closure.
- Closure of the WMPs and pyritic TSF will include groundwater monitoring in the facility footprints after closure for contaminated water that may have leaked through the liners to shallow groundwater. If required, impacted groundwater will be collected in wells and sent to the pit lake for as long as needed to meet applicable regulatory requirements.
- Material site design and reclamation and closure plans will incorporate measures to make the sites blend with the natural conditions after closure.
- During reclamation slopes will be contoured to blend with surrounding topography where feasible and erosion control measures will be implemented to stabilize slopes.

- Where seeding is the preferred approach to reestablishing vegetation, PLP will use native weed-free applied at specified rates in compliance with the approved Closure and Reclamation Plan.
- Reclamation plans will include clear goals with measurable objectives and performance standards. Reclamation monitoring will be performed and data will be collected to measure progress against objectives.

### **Spill Prevention and Response and Groundwater Protection**

- Excess water from the bulk and pyritic TSFs will be pumped to the main water management pond to reduce the potential for TSF failure or spills resulting from overtopping.
- Piezometers will be installed in the bulk TSF tailings mass to monitor pore pressures during fill placement, and trigger levels established to monitor the development and dissipation of pore pressures during construction. If excess pore pressures develop adjacent to the upstream edge of the centerline portion of the embankment, fill placement procedures may be modified or stopped in certain locations to allow pore pressures to dissipate.
- The pyritic TSF liner will be protected from damage during waste rock placement by placing processed materials (sand and gravel) on top of the liner to minimize the risk of damage from equipment.
- An operations, maintenance, and surveillance (OMS) manual will outline maintenance and monitoring requirements for the bulk TSF and will be continually updated as required throughout operations and closure.
- An emergency action plan will be developed for the TSFs and water management pond.
- In the event of a tailings spill, a variety of remedial actions will be implemented to address health and safety concerns, such as recovery of spilled tailings, repair of erosion damage, and downstream water quality monitoring.
- Long-term monitoring of embankment stability in post-closure will include ongoing surface runoff and seepage monitoring, regular cover inspections, annual dam safety inspections, and inspections conducted in response to specific events (e.g. earthquakes, large storms).
- During closure and post-closure, equipment and personnel will be maintained at the mine site to support ongoing water treatment, maintenance, and monitoring activities. Redundant mechanical equipment will be stored onsite.
- Pyritic tails will be placed back into the open pit at closure to remove any potential for post-closure failure of the pyritic TSF.
- In post-closure, the pit lake will be maintained at a level that promotes long-term hydraulic containment of pit water, protecting site and regional groundwater quality, while providing for additional storage capacity to allow for treatment downtime due to water treatment plant maintenance or other problems, without over-topping.
- Groundwater levels surrounding the pit will be monitored throughout closure to determine if the control elevation needs to be adjusted to prevent groundwater outflow from the pit.



- Groundwater levels will be monitored during operations in piezometers along the ridge and downstream of the bulk TSF embankment, and operational rules established to maintain hydraulic containment. If seepage through the ridge is detected, contingencies such as relief wells and/or seepage recovery wells will be implemented.
- Operational measures for preparedness, prevention, response, and the natural gas pipeline will be implemented as described in the response to RFI 126 (PLP 2019-RFI 126).
- Secondary containment will be used for all fuel and hazardous chemical storage, and the project would use BMPs for the handling of fuel and hazardous materials.
- PLP will contract with a Spill Response Organization (e.g., Alaska Chadux Corporation) to provide on-call response services and will stockpile spill response equipment at all appropriate locations.
- Operational features for the avoidance and minimization of spills will include:
  - Specialized tanks/containers for the storage and transport of diesel and reagents
  - The use of ice-rated vessels for transportation as required for winter operations
  - The use of double hulled fuel barges for fuel transport
- All reagents will be shipped in their original, approved-for-shipping containers. Where applicable, these original containers will be placed inside steel shipping containers at the factory or consolidation terminal and shipped to the mine site prior to unloading from the steel shipping containers.
- Pipelines will be attached to bridge crossings, removing the need for horizontal directional drilling (HDD) under major river crossings, removing the potential for frac-out.
- Detailed HDD plans will be developed during detailed design for all HDDs and will be in place prior to construction commencement.
- Pipeline leak detection and automatic shut-off systems will be included in the design for the gas, concentrate, and return water pipelines.

### **Protection of Cultural Resources**

- Cultural resource experts will be retained during construction activities, including the offshore construction activities, to respond to any potential cultural sites identified during construction. PLP will comply with all requirements and commitments for timely reporting (and site protection) of any discoveries to the appropriate State and Federal agencies and landowners.
- A Cultural Resources Management Plan (CRMP) is being developed for the project as part of the Section 106 consultation process and as dictated by the draft PA. The CRMP describes the equipment, methodology, training, and assessment techniques that will be used to manage historic properties on state and private lands impacted by the project. The plan describes the process for managing effects to these resources and ensures that agreed-on protocols and procedures are established and followed if any unanticipated cultural resources or human remains are discovered.

### Minimization of Social Impacts

- Access agreements with Alaska Native Claims Settlement Act (ANCSA) Village Corporations include bidding and employment preferences, revenue sharing, and other benefits to enhance local employment and revenue generation.
- The project will establish a local advisory committee to facilitate communications and address concerns during construction and operations.
- PLP will work with the boroughs, landowners, and the state to develop a road management agreement that provides rules for how the road will accommodate use by borough residents and businesses. Controlled use could include scheduled convoys for the transport of private vehicles and supplies, qualification and limited use authorization of third-party vehicles and drivers using the access infrastructure, or other similar arrangements.
- The project will implement workforce development programs and training to prepare local residents for employment at the project.
- The project will have a no hunting, fishing, or gathering policy for non-local employees to prevent additional competition for local resources.
- A Project Communications Plan (PCP) will be developed for the project prior to construction commencement. The PCP will establish the methodology and infrastructure that will be used to keep local residents, guides, and other users informed about upcoming and ongoing activity.
- Drug and Alcohol Abuse Prevention, Cultural Sensitivity, Safety, and other workplace programs will be developed for all employees. These programs will be implemented for all project staff and contractors prior to construction commencement.
- The project will offer to negotiate a Payment in Lieu of Taxes (PILT) to the Lake and Peninsula Borough (LPB) as an alternative to the borough severance tax, to allow for predictability in annual revenues.
- A shift schedule will be established to enable local employees to maximize opportunities to remain active in subsistence harvest activities.
- Road connections to communities will enhance opportunities for local employment while residing at home.
- The natural gas pipeline design has been oversized to allow for regional access to gas, which could reduce regional power costs and dependence on diesel fuel shipments. PLP will engage with landowners, state and/or local governments about options to continue operation of the pipeline when it is no longer required by the project.
- PLP will signpost and maintain road crossings for all terrain vehicles (ATV) or snowmachine use where the access road intersects existing trails.
- PLP will evaluate identified high traffic crossings of the access road for the incorporation of crossing controls such as mandatory stop signs or other traffic control measures.
- PLP will work with the State of Alaska and Lake and Peninsula Borough to address road improvement and maintenance costs arising from PLP's use of the existing section of road between the Newhalen/Iliamna airport and the PLP-constructed mine access road.

### **Implementation of Environmental Plans and Controls and Adaptive Management**

- PLP will develop and implement a Storm Water Pollution Prevention Plan prior to commencing construction.
- PLP will develop and implement an Erosion and Sediment Control Plan prior to commencing construction.
- PLP will update and comply with the Fugitive Dust Control Plan (FDCP) submitted to USACE.
- PLP will develop and implement an industry standard Operations and Maintenance Plan prior to construction that will identify specific dust control measures, implementation triggers, equipment specific requirements, individual responsibilities and contact details, training requirements, and other measures.
- PLP will update and comply with the Invasive Species Management Plan (ISMP) submitted to USACE. Measures will include, but are not limited to:
  - Identifying locations of known invasive plant infestations and planning activities accordingly to manage infestations.
  - Using certified weed-free materials, especially when working near sensitive habitats such as streams and wetlands.
  - Revegetating bare soils with approved techniques as soon as feasible to minimize the possible establishment of invasive plant species.
  - Avoid cleaning equipment in waterways or wetlands, which are particularly sensitive to invasion and could result in changes to aquatic organism habitat/function.
  - Inspecting boats, trailers, and other boating equipment and removing any visible plants, animals, or mud before leaving any waters or boat-launching facilities for transport to new waters.
  - Cleaning, draining, and drying boats, trailers, equipment, clothing, boots, waders before transporting them to new waters.
  - Draining water from motors, live wells, bilges, and transom wells while on land before leaving the vicinity.
  - To minimize infestation and spread of spruce bark beetle, timber along rights-of-way for roads and pipelines will be cut in the fall and the logs utilized before the next spring.
  - All slash and logs four inches in diameter and larger will be disposed of by burning, burying, chipping, or peeling. Stumps will be cut as low as possible.
  - Trees next to the right-of-way will be examined for beetle attacks in late summer following cutting and if they trees are infested, they will be removed.
- If emissions remain high enough to trigger Prevention of Significant Deterioration (PSD) permitting, a Best Available Control Technology (BACT) analysis will be completed for the mine site as part of the State's air permitting program. BACT will be implemented for emissions sources as required by the BACT analysis.
- An Aquatic Resources Monitoring Plan (ARMP) will be developed for the project in consultation with the Alaska Department of Fish and Game (ADF&G). The ARMP will assess the effects of mine operations on aquatic habitats and verify, through biomonitoring,

that waste management control measures at the mine site are protective to the aquatic environment.

- A periodic third-party audit of the mine facility will be completed as part of the state permitting program. The purpose of the facility audit is to verify compliance with applicable environmental laws associated with the Reclamation Plan Approval and Integrated Waste Management Permit by evaluating both PLP's management and state permit administration for reasonable assurances that the facility and environmental controls are functioning as intended. The environmental audit will include an evaluation of the adequacy of the approved financial assurance.
- The Monitoring and Adaptive Management Plan will identify how the monitoring could be used to assess impacts from mine operations.
- Several adaptive management strategies will be employed in the design and operations of the Water Treatment Plants (WTPs) to address potential problems:
  - Sizing with more hydraulic capacity than the predicted maximum inflows.
  - Having a backup treatment train at each WTP.
  - Monitoring to identify influent conditions that could trigger a need for additional treatment capacity.
  - Adding iron to WTP sludge disposed in the pyritic TSF to prevent selenium redissolution.
  - Installation of additional trains and WTP building expansion if needed.
  - Modification of WTP unit processes to maintain compliance with discharge requirements.
- Water management plans and models will be updated during operations, closure, and post-closure until pit lake conditions reach steady state.

### **Protection of Wildlife**

- A Wildlife Interaction Plan will be developed and implemented to minimize human-wildlife interactions and resolve any potential conflicts. This plan will be managed through an adaptive management approach.
  - Wildlife report sightings and interactions reported will be used to assess the effectiveness of mitigation measures or guide project personnel in the establishment of additional mitigation measures as required.
  - The plan will describe education and training for project personnel and contractors, control measures to avoid and minimize human-wildlife interactions deterrence and hazing procedures for reporting wildlife sightings and interactions, and an adaptive management approach.
  - Specific wildlife safety mitigation measures and design features will include, but are not limited to:
    - Secure bear-resistant storage will be used for handling food and garbage.
    - Food will only be left inside vehicles or other unsecured locations when staff are present and can remove the food source in response to wildlife attracted to the food source.

- Food will be kept inside buildings and only permitted inside vehicles for short periods, when workers are unable to use the dining facilities.
  - Food and garbage will be disposed of in dedicated trash containers at each site, and routinely emptied to limit buildup of odors that could attract wildlife. Trash containers inside fenced areas will be located away from the fence line to minimize wildlife attractions
  - Wildlife present on the road will be given the right-of-way.
  - The maximum speed limit for the road system will be set at 35 miles per hour. Speed limits will be reduced as required in areas of high seasonal wildlife usage and at known crossing points. Vehicle speeds will be posted along the road and all drivers will be monitored using mobile GPS fleet tracking technology to ensure compliance.
  - Vegetation along the right of way will be managed (trimming of shrubs and trees) to reduce attractiveness for large mammals by reducing browsing quality.
  - As practical, snowbank height during the winter will be minimized to increase driver visibility.
  - Winter management of snow berms along roadways will include periodic breaks or cleared areas in snow berms to allow wildlife to get off the road during the approach of oncoming vehicles.
  - Any wildlife injuries or mortalities will be immediately reported as appropriate. The carcasses of any road-killed animals will be removed and disposed of in a timely manner so that they do not serve as an attractant to bears or other wildlife.
  - PLP will coordinate with ADF&G on the salvage of fresh, useable game carcasses for community food.
  - Feeding and attracting of wildlife by project personnel will be prohibited.
  - PLP will require specific wildlife awareness training for drivers operating in the area.
- PLP will develop a detailed Bear Interaction Plan designed to minimize conflicts between bears and humans that will be incorporated into the Wildlife Interaction Plan. The plan will be coordinated with ADF&G. At a minimum the plan will include measures to:
    - minimize attraction of bears to facility sites;
    - organize layout of buildings and work areas to minimize interactions between humans and bears;
    - warn personnel of bears near or on facilities and the proper actions to take;
    - if authorized, deter bears from facility sites;
    - provide contingencies in the event bears do not leave the site;
    - provide for the proper storage and disposal of food, garbage or other industrial materials that may be attractants to bears;
    - provide for the proper storage and disposal of materials that may be toxic to bears;
    - provide a systematic record of bears on the site and in the immediate area; and



- additional measures as developed in consultation with ADF&G.
- Encounters with an occupied brown bear den not previously identified by ADF&G will be reported to the Division of Wildlife Conservation, ADF&G, within 24 hours. Mobile activities will avoid such discovered occupied dens by one-half mile unless alternative mitigation measures are approved with concurrence from ADF&G. Non-mobile facilities will not be required to relocate.
- Before commencement of any activities, PLP will consult with ADF&G to identify locations of brown bear den sites.
- PLP will consult with ADF&G on additional wildlife surveys, including brown bear denning surveys, that may be required prior to construction.
- PLP will require mandatory training for mine workers on ethical behavior around brown bear populations (e.g., strict use of bear safe trash cans; strict prohibition of bear feeding and harassing).
- PLP will instruct employees and contractors on relevant rules and regulations that protect wildlife. See the Fish and Wildlife Service webpage on regulations and policies (<https://www.fws.gov/birds/policies-and-regulations.php>).
- PLP will evaluate the use of wildlife detection systems at identified high traffic animal crossings. Animal detection systems use sensors to detect large animals that approach the road. Once a large animal is detected, warning signals are activated to inform the drivers that a large animal may be on or near the road at that time.
- The project will employ protocols to ensure that helicopters and fixed-wing planes do not harass wildlife. These protocols will remain in place throughout construction and the life of the mine.
  - Do not harass or pursue wildlife.
  - Fly 500 feet above ground level or higher when possible and safe to do so.
  - Avoid flying directly overhead observed wildlife and maximize lateral distance.
  - Establish flight restrictions (e.g., elevation restrictions) to reduce caribou hunting impacts.
- PLP will incorporate BMPs and design guidelines for avian protection for the location and design of powerlines. This could include the use of flight diverters and other deterrent devices.
- PLP will incorporate best practice to address lighting impacts to wildlife and minimize overall lighting requirements, while meeting operational and safety needs.
- PLP will follow USFWS Land Clearing Timing Guidance for Alaska to avoid destruction of active bird nests.
- Where appropriate and feasible, PLP will use plastic-free erosion and sediment control products.
- To detect changes to water quality and its effects to wildlife, water quality will continue to be monitored on a regular basis until the mine reclamation is complete. Results will be reported to the State of Alaska in compliance with permit requirements and management plans.

- PLP will follow USFWS Land Clearing Timing Guidance for Alaska to avoid destruction of active bird nests (<https://www.fws.gov/alaska/pages/nesting-birds-timing-recommendations-avoid-land-disturbance-vegetation-clearing>).
- PLP will implement the following measures as detailed in the NMFS Biological Assessment.
  - The project will employ Protected Species Observers (PSOs) to monitor shutdown exclusion zones during Project construction activities that produce underwater noise levels above harassment or injury take thresholds
  - To mitigate for construction noise impacts to cetaceans and pinnipeds during construction, the Applicant would develop and implement a Marine Mammal Monitoring and Mitigation Plan (4MP). Details of the 4MP include the use of PSOs, ramp-up procedures, monitoring of zones, and others.
  - Blasting in Iliamna Bay above the HTL for construction of the Diamond Point port access road will be timed to coincide when tides are at or near minimum elevation to avoid in-water transfer of sound.
  - Vessel speeds will be limited to 10 knots within lower Cook Inlet north of Augustine Island to mitigate potential vessel strike with marine mammals.
  - The mooring systems and components of the anchor cable will be annually inspected each fall after the close of the Cook Inlet salmon setnet fishery to ensure they are in good working order. Any debris caught on the cables will be removed and properly disposed of at that time.
- PLP will implement the following measures as detailed in the USFWS Biological Assessment.
  - The project will employ Protected Species Observer(s) (PSOs) to monitor shutdown exclusion zones during Project construction activities that produce underwater noise levels above harassment or injury take thresholds for northern sea otter.
  - To mitigate for construction noise impacts to sea otters, the Applicant would develop and implement a Marine Mammal Monitoring and Mitigation Plan (4MP). Details of the plan include the use of PSOs, ramp-up procedures, monitoring of 984-foot exclusion zones around fill placement activities, and others.
  - Vessel speeds will be limited to 10 knots for all Project construction vessels operating inside the northern sea otter critical habitat.
  - During operations, supply barges, fuel barges, and concentrate bulk vessels would travel at their normal cruising speeds when entering lower Cook Inlet but would reduce speeds to less than 10 knots when entering sea otter foraging habitat (delimited by the 66-foot depth contour). All lightering barges would operate at speeds less than 10 knots.
  - Guide cables will not be used to secure the communications tower to minimize avian collision risk.
  - Develop a lighting plan to reduce construction and operation lights that might attract eiders or implement lighting that might assist eiders in early detection of structures, including:
  - PLP would follow USFWS best practices for communication tower lighting by avoiding or minimizing the use of lights or utilizing flashing light options that comply with FAA requirements.



- Any light stanchions or equipment located on the causeway/wharf during the first summer of construction will be lowered or removed before winter if not in use, thereby reducing or eliminating eider collision risk.
- Utilize lighting options for the causeway and jetty that minimize bird attraction (such as orienting the lighting downward) while still providing enough light for safe operational activities.
- Mitigation lighting for anchored bulk carriers would also be examined.
- Measures to reduce accidental spills include use of marine radar to avoid other vessels and accurately approach the wharf.
- The concentrate conveyor will be fully enclosed to contain dust and shed snow.
- The barge loader will be fitted with a mechanical dust collection system and each barge would have a cover system to minimize fugitive dust and protect the concentrate from precipitation. During lightering operations, the barge's internal system would retrieve and convey concentrate to the bulk carrier via a self-discharging boom conveyor. The boom will be fully enclosed and equipped with a telescoping spout and would have mechanical dust collection to prevent spillage of fugitive dust.

### **Protection of Aquatic Resources**

- Culverts and bridges will be designed to optimize fish passage, and the project will use BMPs for design, construction, and maintenance.
  - To avoid constricting the natural channel and to allow connectivity of the floodplain transportation corridor stream crossings will meet the USFWS guidelines: (Culvert Design Guidelines for Ecological Function, U.S. Fish and Wildlife Service Alaska Fish Passage Program, Revision 5, February 5<sup>th</sup>, 2020)
- Culverts along project roads will be monitored for fish passage and any problems identified will be corrected promptly.
- Blasting during construction will be done following the guidelines established in the 2013 ADF&G Technical Report (No. 13-03) Alaska Blasting Standard for the Proper Protection of Fish (Timothy 2013).
- Blasting adjacent to tidal waters will be timed to coincide when tides are at or near minimum elevation.
- Excess site water will be treated and released into the Upper Talarik, North Fork Koktuli, and South Fork Koktuli watersheds. Discharge water will be distributed between the three watersheds in a way that optimizes water levels and available downstream fish habitat based on PHABSIM modeling of the three watersheds in consultation with Alaska Department of Fish and Game.
- Treated water will be discharged through buried chambers designed to provide energy dissipation, erosion control, and freeze protection.
- PLP will consult with ADFG during permitting to evaluate the potential for further optimizing discharge locations.

- The project will use pit blasting techniques that minimize the amount of explosives per delay, thereby reducing the overall vibration associated with the blast.
- To detect changes to water quality and its effects to aquatic life, water quality will continue to be monitored on a regular basis until the mine reclamation is complete. Results will be reported to the State of Alaska in compliance with permit requirements and management plans.

### **Human Health and Safety Measures**

- Operational measures will be employed to protect personnel in the event of a tsunami, such as early warning systems, vertical evacuation structures, and operational procedures and training on when to move to higher ground and secure critical equipment.
- Operational procedures will be in place for vessels to cease lightering operations and move to safer locations in deeper water if a tsunami warning is issued or volcanic debris flow activity is predicted.
- PLP will conduct further evaluation of the closest private well to the HDD route at Anchor Point (Figure 3.17-16), designated well 53874 by ADNRR (2016). Measures include:
  - Contact owner to confirm status, use, and pumping rate at the well;
  - Survey location of well compared to HDD final design route;
  - Modify the HDD design to address any concerns identified during engineering
  - Monitor well flow and quality during all construction activities in the area; and
  - Provide and implement (if necessary) contingency plans to provide a comparable source of water in the event groundwater flow or quality at the well is altered as a result of HDD installation.

The Project design is being evaluated in detail through the CWA 404 permitting and National Environmental Policy Act (NEPA) processes and the associated Environmental Impact Statement (EIS), which further analyzes potential measures and alternatives to avoid and minimize project impacts. PLP will continue to work with USACE to identify further opportunities to avoid and minimize potential impacts identified during the permitting and associated public review process.

### **Compensatory Mitigation**

The 2008 *Compensatory Mitigation for Losses of Aquatic Resources: Final Rule* established mechanisms to provide compensatory mitigation for unavoidable impacts to WOUS. PLP conducted a watershed assessment for the Project and has submitted a Draft Compensatory Mitigation Plan to USACE to address mitigation for these unavoidable impacts. PLP's plan includes three proposals for Permittee Responsible Mitigation (PRM).

- Water quality improvements achieved through improvements and repairs to the public sewage management systems in the communities of Nondalton, Newhalen, and Kokhanok.
- Pacific salmon habitat restoration achieved through the removal of barriers to passage resulting from damaged or underperforming road culverts.

- Habitat restoration, wildlife protection, and water quality improvement achieved through the removal of marine debris from beaches in Kamishak Bay.

PLP will continue to work with USACE to identify and implement a compensatory mitigation plan that is appropriate for the final Project.

## Tab 25. Adjoining Property Owners

**Table 25-1. Adjoining Federal, State of Alaska, Local, and Native Corporation Landowners**

Owner	Attention	Mailing Address	City, State, Zip Code	Additional Information
<b>Federal Landowners</b>				
Bureau of Land Management	Chad Padgett State Director	223 W 7th Ave #13	Anchorage, AK 99514	Telephone: 907-271-5080 Fax: 907-271-4596 blm_ak_state_director@blm.gov
<b>State Landowners</b>				
Alaska Department of Natural Resources	Corri Feige, Commissioner Brent Goodrum, Deputy Commissioner	550 W. 7th Ave, Suite 1400	Anchorage, AK 99501- 3561	Telephone: 907 269 8431 Fax: 907-269-8918 corri.feige@alaska.gov brent.goodrum@alaska.gov
ADF&G	Commissioner Doug Vincent- Lang	PO Box 115526	Juneau, AK 99811-5526	Telephone: 907-465-4100 Fax: 907-465-2332 douglas.vincent-lang@alaska.gov
ADOT&PF	Commissioner John MacKinnon	PO Box 112500	Juneau, AK 99811	Telephone: 907-465-3900 john.mackinnon@alaska.gov
University of Alaska Anchorage	Cathy Sandeen, Chancellor	Statewide Office of Land Management 1815 Bragaw St, Ste 101	Anchorage, AK 99508	Telephone: 907-786-7766 Fax: 907-786-7733 ua-land@alaska.edu
<b>Local and Native Corporation Landowners</b>				
Lake and Peninsula Borough	Nathan Hill, Manager	PO Box 495	King Salmon, AK 99613	Telephone: 907-246-3421 <a href="http://www.lakeandpen.com">http://www.lakeandpen.com</a> manager@lakeandpen.com
Kenai Peninsula Borough	Charlie Pierce, Mayor	144 North Binkley Street	Soldotna, AK 99669	Telephone: 907-714-2150 Fax: 907-714-2377 <a href="http://kpb.us.com">http://kpb.us.com</a> cpierce@kpb.us
Alaska Peninsula Corporation	Trefon Angasan, Jr., Chairman of the Board	301 Calista Court, Suite 101	Anchorage, AK 99518	Dave McAlister, CEO Telephone: 907-274-2433 Fax: 907-274-8694 <a href="http://www.alaskapeninsulacorp.com">http://www.alaskapeninsulacorp.com</a>

THE PEBBLE PROJECT

DEPARTMENT OF THE ARMY APPLICATION FOR PERMIT (POA-2017-271)

Owner	Attention	Mailing Address	City, State, Zip Code	Additional Information
Pedro Bay Corporation	Matt McDaniel, President and CEO	721 Depot Drive	Anchorage, AK 99501	907.277.1500 <a href="http://www.pedrobaycorp.com">http://www.pedrobaycorp.com</a>
Iliamna Natives Limited	Lorene Anelon, President	P.O. Box 241588	Anchorage, AK 99503	Telephone: 907-677-9565
Tyonek Native Association	Connie Downing, Chief Administrative Officer	1689 C Street, Suite 219	Anchorage, AK 99501- 5131	Telephone: 907-272-0707
Seldovia Native Association	Don Kashevaroff, President and CEO	800 E. Dimond Blvd, Suite 3- 640	Anchorage, AK 99515	Telephone: 907-868-8006
Salamatof Native Association	Christopher Monfor, President and CEO	230 Main Street	Kenai, AK 99611	Telephone: 907-283-7864
Bristol Bay Native Corporation	Jason Metrokin, President and CEO	111 West 16th Avenue, Ste 400	Anchorage, AK 99501	Telephone: 907-278-3602 Fax: 907-276-3924 <a href="http://www.bbnc.net">http://www.bbnc.net</a>
Newhalen Tribal Council	Henry Olympic, President	P.O. Box 207	Iliamna, AK 99606	Telephone: 907-571-1410 Fax: 907-571-1537 <a href="mailto:newhalentribal@yahoo.com">newhalentribal@yahoo.com</a>
Iliamna Natives Limited	Lorene Anelon, President	P.O. Box 241588	Anchorage, AK 99503	Telephone: 907-677-9565
Nondalton Tribal Council	George Alexi, President	P.O. Box 49	Nondalton, AK 99640	Telephone: 907-294-2257 Fax: 907-294-2271
City of Newhalen	Cathleen D. Gust, City Clerk	P.O. Box 165	Newhalen, AK 99606	Telephone: 907-571-1226 Fax: 907-571-1540 <a href="mailto:cityofnewhalen@yahoo.com">cityofnewhalen@yahoo.com</a>
Iliamna Village Council	Thomas Hedlund, Village Council President	P.O. Box 286	Iliamna, AK 99606	Telephone: 907-571-1246 Fax: 907-571-3539 <a href="mailto:ivc@iliamnavc.org">ivc@iliamnavc.org</a>
Pedro Bay Village Council	Keith Jensen, Village Council President	P.O. Box 47020	Pedro Bay, AK 99647- 0020	Telephone: 907-850-2225 Fax: 907-850-2221 <a href="mailto:villagecouncil@pedrobay.com">villagecouncil@pedrobay.com</a>
City of Nondalton	Carrie Harried, Administrator	PO Box 89	Nondalton, AK 99640	Telephone: 907-294-2235

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Owner	Attention	Mailing Address	City, State, Zip Code	Additional Information
Kokhanok Village Council	Peducia Andrew, President	P.O. Box 1007	Kokhanok, AK 99606	Telephone: 907-282-2202 Fax: 907-282-2264 kokhanok_vc_a@yahoo.com

**Table 25-2. Adjoining Private Landowners**

Owner	Mailing Address	City, State, Zip Code	Legal Description
Darlene D Hanblen	PO Box 1681	Newport, WA 99156	T 4S R 15W SEC 23 SEWARD MERIDIAN HM 0790108 HOLLYWOOD PARK SUB LOT 1
Jack Perry	33716 State Route 706 E	Ashford, WA 98304	T 4S R 15W SEC 23 SEWARD MERIDIAN HM NE1/4 NW1/4
Patricia S Eddy	PO Box 307	Anchor Point, AK 99556	T 4S R 15W SEC 23 SEWARD MERIDIAN HM 0760056 HOLLYWOOD SUB ADDN NO 1 TRACT B
Anthony & Mary J Landrus	PO Box 864	Anchor Point, AK 99556	T 4S R 15W SEC 14 SEWARD MERIDIAN HM 0760016 HOLLYWOOD SUB LOT 3
Elizabeth A & Lennihan David Lynch	P.O. Box 877743	Wasilla, AK 99687	T 4S R 15W SEC 22 & 23 SEWARD MERIDIAN HM 0800029 RUCKER TRACTS SUB TRACT 2
Diamond Point LLC	P.O. Box 240024	Anchorage, AK 99524	USS # 8764 T 6S R 26W SEC 23 & 24 SEWARD MERIDIAN
Anne Dailey	P.O. Box 30	Iliamna, AK 99606	T 4S R 33W SEC 1 SEWARD MERIDIAN INL HOMESITE #31

**Table 25-3. Adjoining Leaseholders/Operators**

Entity	Mailing Address	City, State, Zip Code	Description
GCI – Alaska United Fiber System	5151A Fairbanks Street	Anchorage, AK 99503	Owner/operator of subsea fiber optic cables in Cook Inlet
Hilcorp Alaska, LLC	3800 Centerpoint Drive, #1400	Anchorage, AK 99503	Offshore oil and gas leaseholder in Cook Inlet OCS waters



**Table 25-4. Adjoining Native Allotment Landowners**

The Bureau of Indian Affairs is responsible for designation of Native Allotment case serial numbers. For more information regarding the Native Allotment serial numbers listed here, contact:

Bureau of Indian Affairs, Alaska Regional Office  
3601 C Street  
Anchorage, AK 99503-5947

\*Case serial numbers in **bold** indicate native allotments that intersect project footprint.

Bureau of Indian Affairs Case Serial No.	Bureau of Indian Affairs Case Serial No.	Bureau of Indian Affairs Case Serial No.	Bureau of Indian Affairs Case Serial No.
AKA 032735	AKAA 003102	AKAA 006533A	AKAA 007435D
AKA 033441	AKAA 003103	AKAA 006537D	AKAA 007455
AKA 052564	AKAA 003749	AKAA 006538C	AKAA 007495
AKA 053553	AKAA 004225B	AKAA 006539D	AKAA 007559A
AKA 057267	AKAA 004592A	AKAA 006540C	AKAA 007559B
AKA 057730	AKAA 005574	AKAA 006622A	AKAA 007565A
AKA 061262A	AKAA 005575A	AKAA 006622B	AKAA 007565B
AKA 061262B	AKAA 005577	AKAA 006722	AKAA 007661A
AKA 062076	AKAA 005606A	AKAA 006734A	AKAA 007661B
AKA 062194A	AKAA 005720	AKAA 006734B	AKAA 007721
AKA 062194B	AKAA 006025A	AKAA 006753A	AKAA 007724
AKA 062413	AKAA 006025B	AKAA 006753B	AKAA 007844
AKA 062761	AKAA 006025C	AKAA 007101A	AKAA 007910
AKA 062887A	AKAA 006048	AKAA 007101B	AKAA 007911A
AKA 062887B	AKAA 006055	AKAA 007108	AKAA 007911B
AKA 063273	AKAA 006080	AKAA 007111A	AKAA 007913
AKA 063274A	AKAA 006081	AKAA 007111B	AKAA 008060
AKA 063898B	AKAA 006095A	AKAA 007124	AKAA 008062
AKA 067524	AKAA 006095B	AKAA 007125A	AKAA 008064A
AKAA 000827	AKAA 006280	AKAA 007125B	AKAA 008064B
AKAA 000962	AKAA 006342	AKAA 007148	AKAA 008064C
AKAA 000975A	AKAA 006373A	<b>AKAA 007150A</b>	AKAA 008066
AKAA 001032A	AKAA 006373B	AKAA 007150B	AKAA 008271C
AKAA 001032B	AKAA 006446	AKAA 007241	AKAA 050508
AKAA 002379A	AKAA 006468A	AKAA 007347A	<b>AKAA 051014</b>
AKAA 002379B	AKAA 006519A	AKAA 007350	

## Tab 26. List of Other Certificates or Approvals/Denials

Following is an initial list of required permits and approvals, and the agencies responsible for their issuance.

Agency	Approval Type	Project-related Examples
<b>Federal</b>		
BATF	License to Transport Explosives	Construction explosives acquisition and use
	Permit and License for Use of Explosives	Construction explosives acquisition and use
BSEE	Right-of-Way Authorization for Natural Gas Pipeline	Subsea natural gas pipeline in OCS waters
DHS	Airport Security Operations Plan	Iliamna Airport
	Port Facility Security Coordinator Certification	Port site
	Port Security Operations Plan	Port site
EPA	Facility Response Plan (required to be submitted to EPA, however EPA does not provide plan approvals)	Fuel storage facilities, fuel transport on the mine roadway
	RCRA Registration for Identification Number	Storage and disposal of hazardous wastes
	Spill Prevention, Control, and Countermeasure (SPCC) Plan (SPCC plans are not required to be submitted or approved by EPA. The plan will be reviewed and certified by a Professional Engineer licensed in Alaska)	Fuel storage facilities
FAA	Notice of Controlled Firing Area for Blasting	Construction and mining blasting activity
FCC	Radio License	Radios
MSHA	Mine Identification Number	Mine site
	Notification of Legal Identity	Mine site

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Agency	Approval Type	Project-related Examples
NMFS	Magnuson-Stevens Fishery Conservation and Management Act Consultation documentation	Necessary in areas where mine, road, or port site activity affect essential fish habitat
USACE	Clean Water Act Section 404 permit for Discharge of Dredge or Fill Material into Waters of the U.S.	Fill into wetlands for a variety of facilities at the mine, road, pipelines, port site
	Rivers and Harbors Act Section 10 Construction of any structure in or over any Navigable Waters of the U.S.	Road bridges and causeway; port site docking and ship-loading facilities and maintenance dredging.
USCG	Facility Response Plan	Fuel storage facilities
	Fuel Offloading Plan; Person in Charge Certification	Offloading fuel from barges at the port
	Hazardous Cargo Offloading Plan; Port Operations Manual Approval	Offloading hazardous cargo from ships
	Navigation Lighting and Marking Aids Permit	Port facilities
	Rivers and Harbors Act Section 9 Construction Permit for a Bridge or Causeway across Navigable Waters	Bridges along road
USDOT	Registration for Identification Number to Transport Hazardous Wastes	Transport of hazardous wastes to approved disposal site
USFWS	Bald and Golden Eagle Protection Act Programmatic Take Permit	May be necessary in areas where mine, road, or port site activity may disturb eagles
	Migratory Bird Treaty Act Consultation documentation	May be necessary in areas where mine, road, or port site activity may disturb migratory birds
USFWS/NMFS	Endangered Species Act Incidental Take Authorization	May be necessary at the port site and for sub-sea pipeline construction where activities could disturb northern sea otter, Beluga whale, Steller sea lion, Steller's eider
	Marine Mammal Protection Act Incidental Take Authorization; Letter of Authorization	May be necessary at port site where activities could disturb marine mammals.
<b>State</b>		

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Agency	Approval Type	Project-related Examples
ADEC	Alaska Solid Waste Program Integrated Waste Management Permit/Plan Approval	Tailings disposal, waste rock disposal, landfills
	Reclamation Plan Approval and Bonding	Required prior to construction.
	Alaska Solid Waste Program Solid Waste Disposal Permit; Open Burn Permit	Construction waste material disposal
	Clean Water Act Section 402 Alaska Pollutant Discharge Elimination System Water Discharge Permit	Water discharges from water treatment plants at the mine site
	Approval to Construct and Operate a Public Water Supply System	Mine and port, and construction camps
	Clean Air Act Air Quality Control Permit to Construct and Operate – Prevention of Significant Deterioration	Power plant and other non-mobile air emissions; fugitive dust; applicable to mine, road, and port
	Clean Air Act Title V Operating Permit	Power plant and other non-mobile air emissions; fugitive dust; applicable to mine and road
	Clean Air Act Title I Operating Permit	Non-mobile air emissions; stationary sources, fugitive dust; applicable to port and Kenai compressor station
	Clean Water Act Section 401 Certification	Certification of the Section 404 Permit.
	Clean Water Act Section 402 Stormwater Construction and Multi-Sector General Permit; Stormwater Discharge Pollution Prevention Plan	Surface water runoff discharges at mine, road, and port site
ADF&G	Food Sanitation Permit	Mine and port, and construction camps
	Oil Discharge Prevention and Contingency Plan (ODPCP or “C” Plan)	Fuel storage and transfer facilities, port and mine
	Fish collection permits for monitoring	Required for construction and monitoring
	Fish Habitat Permit	Required for most work in anadromous streams and for most work in resident fish streams that might affect fish passage.

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Agency	Approval Type	Project-related Examples
ADNR	Alaska Dam Safety Program Certificate of Approval to Construct a Dam	Tailings dam, seepage control dams
	Alaska Dam Safety Program Certificate of Approval to Operate a Dam	Tailings dam, seepage control dams
	Reclamation Plan Approval and Bonding	Required prior to construction.
	Lease of other State Lands	Any miscellaneous other state lands to be used by the Pebble Project – none identified at this time
	Material Sale on State Land	Materials removed from quarry sites for construction
	Mill Site Permit	All facilities on state lands
	Mining license	All facilities on state lands
	Miscellaneous Land Use Permit	All facilities on state lands
	National Historic Preservation Act Section 106 Review	Area of Potential Effect
	Pipeline Right-of-Way Lease	Natural gas pipeline on State lands and in State waters
	Fiber Optic Cable Right-of-Way Lease	Fiber Optic Cable on State lands and in State waters
	Powerline Right-of-Way Lease	Powerlines to support electric power distribution
	Road Right-of-Way Lease	Road between mine and port site
	Temporary Water Use Permit; Permit to Appropriate Water	Surface and groundwater flow reductions
	Tidelands Lease	Port structures below HTL
	Upland Mining Lease	All facilities on state lands
ADOL	Certificate of Inspection for Fired and Unfired Pressure Vessels	
ADOT&PF	Driveway Permit	Road
	Utility Permit on Right-of-Way	Natural gas pipeline on the Kenai Peninsula
ADPS	Approval to Transport Hazardous Materials	Transport of hazardous materials along the road
	Life and Fire Safety Plan Check	Mine and port
	State Fire Marshall Plan Review Certificate of Approval	For each individual building

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Agency	Approval Type	Project-related Examples
<b>Local</b>		
KPB	Conditional Use Permit	
	Floodplain Development Permit	
	Multi-Agency Permit Application	
L&PB	Lake and Peninsula Borough Development Permit	Mine and road area within the Lake and Peninsula Borough

ADEC = Alaska Department of Environmental Conservation  
 ADF&G = Alaska Department of Fish and Game  
 ADNR = Alaska Department of Natural Resources  
 ADOT&PF = Alaska Department of Transportation and Public Facilities  
 ADPS = Alaska Department of Public Safety  
 BATF = U.S. Bureau of Alcohol, Tobacco, and Firearms  
 BSEE = Bureau of Safety and Environmental Enforcement  
 DHS = U.S. Department of Homeland Security  
 EPA = U.S. Environmental Protection Agency  
 FAA = Federal Aviation Administration  
 FCC = Federal Communications Commission  
 KPB = Kenai Peninsula Borough  
 L&PB = Lake and Peninsula Borough  
 MSHA = U.S. Mine Safety and Health Administration  
 NMFS = National Marine Fisheries Service  
 RCRA = Resource Conservation and Recovery Act  
 USACE = U.S. Army Corps of Engineers  
 USCG = U.S. Coast Guard  
 USDOT = U.S. Department of Transportation  
 USFWS = U.S. Fish and Wildlife Service

## Attachment A

### Figures

Attachment A figures are compiled in a separate pdf file.



## Attachment B

### Project Description

## Attachment C

### Culvert Schedule

*Culvert Category Schedule*

<b>Crossing ID</b>	<b>Culvert Type</b>	<b>Culvert Category</b>	<b>Culvert Width (feet)</b>	<b>Culvert Length (feet)</b>
D1007	CULVERT	2	3	130
D1020	CULVERT	2	4	200
D1022	CULVERT	2	4	80
D1023	CULVERT	2	4	140
D1024	CULVERT	2	4	120
D1025	CULVERT	2	4	110
D1027	CULVERT	2	3	180
D1028	CULVERT	2	4	130
D1036	CULVERT	2	4	150
D1037	CULVERT	2	4	130
D1039	CULVERT	2	4	140
D1043	CULVERT	2	3	90
D1045	CULVERT	2	4	150
D1046	CULVERT	2	4	150
D1047	CULVERT	2	4	140
D1048	CULVERT	2	4	120
D1049	CULVERT	2	4	90
D1056	CULVERT	2	4	110
D1057	CULVERT	2	4	130
D1059	CULVERT	2	4	120
D1064	CULVERT	2	4	90
D1065	CULVERT	2	4	160
D1071	CULVERT	2	4	100
D1086	CULVERT	2	4	120
D1087	CULVERT	2	3	80
D1093	CULVERT	2	4	80
D1096	CULVERT	2	4	120
D1097	CULVERT	2	4	100
D1098	CULVERT	2	4	120
E008	CULVERT	2	4	60
E009	CULVERT	2	4	90
E010	CULVERT	2	4	90
E011	CULVERT	2	4	90
E012	CULVERT	2	4	80
E016	CULVERT	2	4	80
T003	CULVERT	2	4	170
T005	CULVERT	2	4	90
D1001	CULVERT	3	5	60
D1021	CULVERT	3	5	130
D1026	CULVERT	3	5	120
D1029	CULVERT	3	8	110
D1030	CULVERT	3	5	85
D1031	CULVERT	3	5	90
D1032	CULVERT	3	6	110

<b>Crossing ID</b>	<b>Culvert Type</b>	<b>Culvert Category</b>	<b>Culvert Width (feet)</b>	<b>Culvert Length (feet)</b>
D1033	CULVERT	3	6	90
D1040	CULVERT	3	7	110
D1041	CULVERT	3	7	150
D1042	CULVERT	3	6	80
D1053	CULVERT	3	6	100
D1054	CULVERT	3	8	90
D1055	CULVERT	3	7	100
D1058	CULVERT	3	5	100
D1061	CULVERT	3	7	130
D1062	CULVERT	3	5	90
D1063	CULVERT	3	5	200
D1066	CULVERT	3	5	135
D1067	CULVERT	3	6	130
D1069	CULVERT	3	8	130
D1070	CULVERT	3	6	120
D1072	CULVERT	3	5	110
D1073	CULVERT	3	5	100
D1081	CULVERT	3	5	110
D1082	CULVERT	3	6	80
D1094	CULVERT	3	3	610
D1102	CULVERT	3	6	180
D1103	CULVERT	3	6	110
E014	CULVERT	3	8	80
T004	CULVERT	3	6	150
D1011	CULVERT	4	5	110
D1013	CULVERT	4	5	70
D1014	CULVERT	4	6	180
D1015	CULVERT	4	6	110
D1016	CULVERT	4	7	90
D1017	CULVERT	4	5	100
D1018	CULVERT	4	5	100
D1019	CULVERT	4	6	130
D1034	CULVERT	4	5	130
D1038	CULVERT	4	5	100
D1044	CULVERT	4	7	120
D1050	CULVERT	4	6	90
D1051	CULVERT	4	6	90
D1052	CULVERT	4	5	90
D1075	CULVERT	4	5	80
D1080	CULVERT	4	6	200
D1083	CULVERT	4	4	110
D1085	CULVERT	4	4	85
D1088	CULVERT	4	5	80
D1090	CULVERT	4	6	80
D1091	CULVERT	4	8	100

<b>Crossing ID</b>	<b>Culvert Type</b>	<b>Culvert Category</b>	<b>Culvert Width (feet)</b>	<b>Culvert Length (feet)</b>
D1099	CULVERT-EQUALIZATION	4	8	120
D1100	CULVERT-EQUALIZATION	4	8	120
D1101	CULVERT-EQUALIZATION	4	8	120
D1105	CULVERT-EQUALIZATION	4	6	130
D1106	CULVERT-EQUALIZATION	4	6	130
E001	CULVERT	4	5	100
E002	CULVERT	4	5	70
E003	CULVERT	4	6	50
E005	CULVERT	4	5	125
E006	CULVERT	4	5	80
T001	CULVERT-ELLIPTICAL	4	8	180
T002	CULVERT	4	6	250
T005A	CULVERT	4	5	150
T005B	CULVERT	4	4	180
T006	CULVERT	4	8	110
T006A	CULVERT	4	5	110
T008	CULVERT	4	5	190
D1104	CULVERT	5	6	90
D1002	CULVERT-ARCH	7	15	90
D1003	CULVERT-ARCH	7	20	80
D1005	CULVERT-ARCH	7	15	125
D1009	CULVERT-ARCH	7	15	100
D1074	CULVERT-ARCH	7	25	115
D1078	CULVERT-ARCH	7	15	160
E004	CULVERT-ARCH	7	15	80
E013	CULVERT-ARCH	7	15	170

## Attachment D

### ORM Spreadsheet and Wetlands GIS Data

Files provided electronically.

## Attachment E

### Project GIS Data

Files provided electronically.